Australian Government

UET Transmission, Distribution and Rail Sector

Release 5.0

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UET Transmission, Distribution and Rail Sector

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Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET20321 Certificate II in ESI - Powerline Vegetation Control

Modification History

Release 3. Text amended to reflect PUAWHS002 as a Group B elective.

Release 2. PUAWHS002 Maintain safety at an incident scene added to Group B electives. AHCPCM201 Recognise plants moved from Group B to Group A electives.

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Qualification Description

This qualification provides the skills and knowledge to work in the electricity supply industry (ESI) or the vegetation control industry as a Powerline Vegetation Control Worker.

This qualification covers vegetation control work at and above ground level in the vicinity of live electrical apparatus. It also includes complying with relevant legislation, applicable industry guidelines, codes of practices or other related requirements for safe work in the vicinity of live electrical apparatus.

The application of the skills and knowledge described within the units in this qualification may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

A total of **8 units** comprising:

- **5 core units** listed below; plus
- **2 elective units** from Group A listed below; plus
- **1 elective unit** from any group listed below within this qualification or, with appropriate contextualisation, from a qualification in this or any other endorsed Training Package, provided selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional

to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

AHCMOM213 Operate and maintain chainsaws

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

∟UETDREL002 Comply with environmental requirements

∟UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟UETDRVC001 Apply work health and safety requirements for powerline vegetation control

Group A

AHCPCM204 Recognise plants

UETDRVC002 Assess vegetation in an electricity supply industry environment

∟UETDREL002 Comply with environmental requirements

∟UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟UETDRVC001 Apply work health and safety requirements for powerline vegetation control

UETDRVC004 Control vegetation in the vicinity of live electrical apparatus from an elevated work platform

∟UETDREL002 Comply with environmental requirements

∟UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟UETDRVC001 Apply work health and safety requirements for powerline vegetation control

∟UETDRVC007 Control vegetation using pruning techniques

∟UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

UETDRVC005 Control vegetation in the vicinity of live electrical apparatus from ground level

∟ UETDREL002 Comply with environmental requirements

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟ UETDRVC001 Apply work health and safety requirements for powerline vegetation control

∟ UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

UETDRVC006 Control vegetation in the vicinity of live electrical apparatus from within the tree

∟ UETDREL002 Comply with environmental requirements

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟ UETDRVC001 Apply work health and safety requirements for powerline vegetation control

∟ UETDRVC007 Control vegetation using pruning techniques

∟ UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

UETDRVC007 Control vegetation using pruning techniques

∟ UETDREL002 Comply with environmental requirements

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟ UETDRVC001 Apply work health and safety requirements for powerline vegetation control

UETDRVC010 Perform rescue from within a tree in the vicinity of live electrical apparatus

∟ UETDREL002 Comply with environmental requirements

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟ UETDRVC001 Apply work health and safety requirements for powerline vegetation control

∟ UETDRVC006 Control vegetation in the vicinity of live electrical apparatus from within the tree

∟ UETDRVC007 Control vegetation using pruning techniques

∟ UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

UETDRVC011 Use specialised plant to cut vegetation above ground in the vicinity of live electrical apparatus

∟ UETDREL002 Comply with environmental requirements

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟ UETDRVC001 Apply work health and safety requirements for powerline vegetation control

∟ UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

Group B

AHCARB322	Access trees for inspection
AHCCHM201	Apply chemicals under supervision
AHCMOM304	Operate machinery and equipment
AHCPCM205	Fell small trees ∟ AHCMOM213 Operate and maintain chainsaws
FWPHAR2208	Operate a mobile chipper/mulcher
PUAWHS002	Maintain safety at an incident scene
TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Qualification Mapping Information

This qualification replaces and is equivalent to UET20319 Certificate II in ESI – Powerline Vegetation Control

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET20621 Certificate II in ESI - Asset Inspection and Testing

Modification History

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Qualification Description

This qualification provides the skills and knowledge to work in the electricity supply industry (ESI) as an Asset Inspector.

This qualification covers inspecting, testing and reporting on the status of electricity network assets, including poles, hardware, cables, overhead conductors, public lighting and electrical apparatus. It also includes the use of specialised asset inspection equipment and software applications.

The application of the skills and knowledge described within the units in this qualification may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

A total of **8 units** of competency comprising:

- **6 core units** listed below; plus
- **2 elective units** from the elective units listed below, of which, 1 elective unit may be selected, with appropriate contextualisation, from a qualification in this or any other endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

UEECD0007	Apply work health and safety regulations, codes and practices in the workplace

UETDRAI001	Inspect and test poles at and below ground level ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace and ∟ UETDREL002 Comply with environmental requirements ∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker or ∟ UETDREL001 Apply environmental requirements ∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRAI002	Inspect poles, hardware and electrical apparatus ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UETDREL002 Comply with environmental requirements ∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker
UETDRAI005	Use asset inspection equipment ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UETDREL002 Comply with environmental requirements ∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker
UETDREL002	Comply with environmental requirements
UETDREL006	Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Elective units

AVIW0006	Perform infrastructure inspections using remote operated systems
UETDRAI003	Perform minor maintenance on electricity network assets ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UETDREL002 Comply with environmental requirements ∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRAI004	Treat poles ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UETDREL002 Comply with environmental requirements ∟UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker
UETDRDU002	Inspect underground electrical apparatus ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace and ∟UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker or ∟UETDREL005 Work safely in the vicinity of live electrical apparatus

Qualification Mapping Information

This qualification replaces and is equivalent to UET20619 Certificate II in ESI – Asset Inspection

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET20422 Certificate II in Transmission Line Construction

Modification History

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 3.0.

Qualification Description

This qualification provides the skills and knowledge to work in the electricity supply industry (ESI) as a Transmission Line Construction Worker.

This qualification covers assembling transmission structures and installing hardware. It also includes stringing transmission overhead conductors prior to being tensioned and terminated.

The application of the skills and knowledge described within the units in this qualification may require a licence/registration to practice in the workplace.

High risk work (HRW) licences are required for dogging work and rigging as outlined on the Safe Work Australia website.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this qualification.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

A total of 10 units of competency comprising:

- 8 core units listed below; plus
- 2 elective units from the elective units listed below, of which, 1 elective unit may be selected, with appropriate contextualisation, from a qualification in this or any other endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

CPCCLDG3001 Licence to perform dogging

CPCCLRG3001	Licence to perform rigging basic level
	∟ CPCCLDG3001 Licence to perform dogging
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UETDREL002	Comply with environmental requirements
UETDREL006	Work safely in the vicinity of live electrical apparatus as a non-electrical worker
UETDRTO015	Assemble and erect transmission structures
	∟ CPCCLDG3001 Licence to perform dogging
	∟ CPCCLRG3001 Licence to perform rigging basic level
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UETDREL002 Comply with environmental requirements
UETDRTO016	Install transmission structure hardware
	∟ CPCCLDG3001 Licence to perform dogging
	∟ CPCCLRG3001 Licence to perform rigging basic level
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UETDREL002 Comply with environmental requirements
UETDRTO017	String overhead transmission conductors
	∟ CPCCLDG3001 Licence to perform dogging
	∟ CPCCLRG3001 Licence to perform rigging basic level
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UETDREL002 Comply with environmental requirements
	∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker
	∟ UETDRTO015 Assemble and erect transmission structures
	∟ UETDRTO016 Install transmission structure hardware

Elective Units

CPCCLRG3002	Licence to perform rigging intermediate level
	∟ CPCCLRG3001 Licence to perform rigging basic level

CPCCLRG4001	Licence to perform rigging advanced level ∟CPCCLRG3002 Licence to perform rigging intermediate level
RIIHAN309F	Conduct telescopic materials handler operations
TLILIC0003	Licence to operate a forklift truck
TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)
TLILIC0024	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)
TLILIC2015	Licence to drive a medium rigid vehicle
TLILIC2016	Licence to drive a heavy rigid vehicle

Qualification Mapping Information

This qualification replaces and is not equivalent to UET20421 Certificate II in Transmission Structure and Line Assembly

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET30521 Certificate III in ESI - Transmission Overhead

Modification History

Release 2. Updated superseded TLI elective units.

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Qualification Description

This qualification provides the skills and knowledge to work in the electricity supply industry (ESI) as an Overhead Transmission Lineworker.

This qualification covers work on transmission overhead powerlines, including the installation, inspection and maintenance of towers, poles, structures, conductors and hardware.

The application of the skills and knowledge described within the units in this qualification may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

A total of **19 units** comprising:

- **17 core units** listed below; plus
- **2 electives units** from the elective units listed below, of which, 1 elective unit may be selected, with appropriate contextualisation, from a qualification in this or any other endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

CPCCLDG3001 Licence to perform dogging

CPCCLRG3001 Licence to perform rigging basic level

∟ CPCCLDG3001 Licence to perform dogging

TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0046 Solve problems in single path circuits

UEECD0046 Solve problems in single path circuits

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

and

∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

and

∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDRTO004 Inspect and maintain transmission overhead network

∟ CPCCLDG3001 Licence to perform dogging

∟ CPCCLRG3001 Licence to perform rigging basic level

∟ TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRTO005 Inspect transmission structures, conductors and hardware

∟ UETDRTO006 Install and maintain transmission conductors

∟ UETDRTO007 Install and maintain transmission structures and hardware

UETDRTO005 Inspect transmission structures, conductors and hardware

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTO006 Install and maintain transmission conductors

∟ CPCCLRG3001 Licence to perform rigging basic level

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRTO007 Install and maintain transmission structures and hardware

UETDRTO007 Install and maintain transmission structures and hardware

∟ CPCCLRG3001 Licence to perform rigging basic level

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Elective Group

AHCMOM213 Operate and maintain chainsaws

AVIW0006 Perform infrastructure inspections using remote operated systems

CPCCLRG3002 Licence to perform rigging intermediate level

∟ CPCCLRG3001 Licence to perform rigging basic level

CPCCLRG4001 Licence to perform rigging advanced level

∟ CPCCLRG3002 Licence to perform rigging intermediate level

ICTWHS202	Work safely in a radio frequency electromagnetic radiation environment
TLILIC0003	Licence to operate a forklift truck
TLILIC0022	Licence to operate a slewing mobile crane (up to 20 tonnes)
TLILIC0024	Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)
TLILIC2016	Licence to drive a heavy rigid vehicle
UETDRDO001	Inspect overhead poles, structures and electrical apparatus ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟ UETDREL001 Apply environmental requirements ∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRIS007	Install and maintain distribution overhead conductors and cables ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟ UETDREL001 Apply environmental requirements ∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus ∟ UETDREL005 Work safely in the vicinity of live electrical apparatus ∟ UETDRIS012 Install and maintain poles, structures and hardware
UETDRIS008	Install and maintain electrical apparatus ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

and

∟ UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

∟ UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

or

∟ UETDRIS007 Install and maintain overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS012 Install and maintain poles, structures and hardware

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRSB001 Perform substation switching operations to a given schedule

UETDRVC003 Control vegetation for powerline work

∟ AHCMOM213 Operate and maintain chainsaws

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Qualification Mapping Information

This qualification replaces and is equivalent to UET30519 Certificate III in ESI – Power Systems – Transmission Overhead

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET30621 Certificate III in ESI - Distribution Overhead

Modification History

Release 2. Units added in Elective Group B and superseded elective units updated:

- UETDRIS023
- UETDRIS024

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Qualification Description

This qualification provides the skills and knowledge to work in the electricity supply industry (ESI) as an Overhead Distribution Lineworker.

This qualification covers the installation, maintenance and inspection of poles, structures, hardware, electrical apparatus and the use of support plant, tools and equipment.

The application of the skills and knowledge described within the units in this qualification may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

A total of **24 units** comprising:

- **20 core units** listed below; plus
- **4 elective units** from Group A elective units listed below, of which, 1 elective unit may be selected with appropriate contextualisation from a qualification in this or any other endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

The units within Group B electives are used by ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements. (Refer Transmission, Distribution and Rail Sector Companion Volume Implementation Guide for

further information)

Core units

AHCMOM213	Operate and maintain chainsaws
CPCCLDG3001	Licence to perform dogging
TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0044	Solve problems in multiple path circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0046 Solve problems in single path circuits
UEECD0046	Solve problems in single path circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEEEL0020	Solve problems in low voltage a.c. circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices and ∟ UEECD0043 Solve problems in direct current circuits or ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits
UEEEL0021	Solve problems in magnetic and electromagnetic devices ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

and

∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDRDO001 Inspect overhead poles, structures and electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDO005 Maintain overhead energised low voltage distribution network

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and

cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRDO006 Maintain, test and verify distribution overhead network

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDO001 Inspect overhead poles, structures and electrical apparatus

∟ UETDRDO005 Maintain overhead energised low voltage distribution network

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS008 Install and maintain electrical apparatus

∟ UETDRIS010 Install and maintain low voltage overhead services

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS008 Install and maintain electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

and

∟ UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

∟ UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

or

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS010 Install and maintain low voltage overhead services

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS012 Install and maintain poles, structures and hardware

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Group A: Elective units

AVIW0006 Perform infrastructure inspections using remote operated systems

UETDREL003 Identify and apply controls for alternate supplies on the distribution network

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS018 Perform low voltage field switching operation to a given schedule

UETDRIS011 Install and maintain low voltage underground services

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS013 Install and maintain public lighting systems

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDO005 Maintain overhead energised low voltage distribution network

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS014 Install and replace energy meters and associated equipment

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and

specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

UETDRIS015 Install low voltage mobile generator

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS017 Perform high voltage field switching operation to a given schedule

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS018 Perform low voltage field switching operations to a given schedule

UETDRIS018 Perform low voltage field switching operation to a given schedule

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS023 Develop and validate high voltage distribution switching programs

UETDRIS024 Develop and validate low voltage distribution switching programs

UETDRSB001 Perform substation switching operations to a given schedule

UETDRVC003 Control vegetation for powerline work

∟ AHCMOM213 Operate and maintain chainsaws

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Group B: Elective Units

HLTAID009 Provide cardiopulmonary resuscitation

UETDRMP001 Apply access authority procedures to work on or near electrical apparatus

∟ UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

UETDRMP003 Perform cable pit/trench/excavation rescue

∟ HLTAID009 Provide cardiopulmonary resuscitation

and

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

or

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRMP004 Perform elevated work platform controlled descent escape

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

or

∟ TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

UETDRMP005 Perform elevated work platform rescue

∟ HLTAID009 Provide cardiopulmonary resuscitation

and

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

or

∟ TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

or

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRMP006 Perform pole top rescue

∟ HLTAID009 Provide cardiopulmonary resuscitation

and

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

or

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRMP007 Perform rescue from a live low voltage panel

∟ HLTAID009 Provide cardiopulmonary resuscitation

and

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

or

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRMP008 Perform rescue from switchyard structures

∟ HLTAID009 Provide cardiopulmonary resuscitation

∟ UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

UETDRMP009 Perform tower rescue

∟ HLTAID009 Provide cardiopulmonary resuscitation

and

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

or

∟ CPCCLDG3001 Licence to perform dogging

∟ CPCCLRG3001 Licence to perform rigging basic level

UETDRMP010 Provide first aid in an ESI environment

∟ HLTAID009 Provide cardiopulmonary resuscitation

UETDRMP011 Testing of connections to low voltage electricity networks

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

and

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS010 Install and maintain low voltage overhead services

or

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS011 Install and maintain low voltage underground services

or

∟ UETDRIS014 Install and replace energy meters and associated equipment

UETDRMP012 Working on energised low voltage overhead electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDO005 Maintain overhead energised low voltage distribution network

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRMP013 Working on energised low voltage underground electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDU011 Joint, terminate and maintain energised low voltage underground polymeric cable

∟ UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Qualification Mapping Information

This qualification replaces and is equivalent to UET30619 Certificate III in ESI - Power Systems - Distribution Overhead

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET30721 Certificate III in ESI - Rail Traction

Modification History

Release 2. Updated superseded TLI elective units.

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Qualification Description

This qualification provides the skills and knowledge to work in the electrical supply industry (ESI) as a Rail Traction Lineworker.

This qualification covers the installation, maintenance and inspection of overhead poles/structures, conductors, cables and rail traction wiring systems, including associated equipment used in the rail traction industry. It also includes the maintenance of bonds and the operation of rail traction height access equipment.

The application of the skills and knowledge described within the units in this qualification may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

A total of **28 units** of competency comprising:

- **26 core units** listed below; plus
- **2 elective units** from the elective units listed below, of which, 1 elective unit may be selected, with appropriate contextualisation, from a qualification in this or any other endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

AHCMOM213 Operate and maintain chainsaws

CPCCLDG3001	Licence to perform dogging
CPCCLRG3001	Licence to perform rigging basic level ∟ CPCCLDG3001 Licence to perform dogging
TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0044	Solve problems in multiple path circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0046 Solve problems in single path circuits
UEECD0046	Solve problems in single path circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEEEL0020	Solve problems in low voltage a.c. circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices and ∟ UEECD0043 Solve problems in direct current circuits or ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits
UEEEL0021	Solve problems in magnetic and electromagnetic devices ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace and

∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS012 Install and maintain poles, structures and hardware

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRT001 Install overhead rail traction configurations

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

∟ UETDRRT002 Install overhead traction components and equipment

∟ UETDRRT004 Install traction overhead wiring systems

UETDRRT002 Install overhead traction components and equipment

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT003 Install rail traction bonds

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

∟ UETDRRT002 Install overhead traction components and equipment

∟ UETDRRT004 Install traction overhead wiring systems

UETDRRT004 Install traction overhead wiring systems

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

	∟ UETDRIS007 Install and maintain distribution overhead conductors and cables
	∟ UETDRIS012 Install and maintain poles, structures and hardware
	∟ UETDRRT002 Install overhead traction components and equipment
UETDRRT008	Maintain overhead rail traction configurations
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
	∟ UETDRIS007 Install and maintain distribution overhead conductors and cables
	∟ UETDRIS012 Install and maintain poles, structures and hardware
	∟ UETDRRT001 Install overhead rail traction configurations
	∟ UETDRRT002 Install overhead traction components and equipment
	∟ UETDRRT004 Install traction overhead wiring systems
	∟ UETDRRT009 Maintain overhead traction components and equipment
	∟ UETDRRT011 Maintain traction overhead wiring systems
UETDRRT009	Maintain overhead traction components and equipment
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

∟ UETDRRT002 Install overhead traction components and equipment

UETDRRT010 Maintain rail traction bonds

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

∟ UETDRRT002 Install overhead traction components and equipment

∟ UETDRRT003 Install rail traction bonds

∟ UETDRRT004 Install traction overhead wiring systems

∟ UETDRRT009 Maintain overhead traction components and equipment

∟ UETDRRT011 Maintain traction overhead wiring systems

UETDRRT011 Maintain traction overhead wiring systems

∟ UEECD0007 Apply work health and safety regulations, codes and

practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

∟ UETDRRT002 Install overhead traction components and equipment

∟ UETDRRT004 Install traction overhead wiring systems

UETDRRT012 Operate rail road height access plant near rail traction systems

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRT014 Test and verify rail traction installations

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

∟ UETDRRT001 Install overhead rail traction configurations

∟ UETDRRT002 Install overhead traction components and equipment

∟ UETDRRT003 Install rail traction bonds

∟ UETDRRT004 Install traction overhead wiring systems

∟ UETDRRT008 Maintain overhead rail traction configurations

∟ UETDRRT009 Maintain overhead traction components and equipment

∟ UETDRRT010 Maintain rail traction bonds

∟ UETDRRT011 Maintain traction overhead wiring systems

∟ UETDRRT012 Operate rail road height access plant near rail traction systems

Group A

CPCCLRG3002 Licence to perform rigging intermediate level

∟ CPCCLRG3001 Licence to perform rigging basic level

TLILIC0003 Licence to operate a forklift truck

TLILIC0022 Licence to operate a slewing mobile crane (up to 20 tonnes)

TLILIC0024 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)

TLILIC2015 Licence to drive a medium rigid vehicle

TLILIC2016 Licence to drive a heavy rigid vehicle

UETDRAI001 Inspect and test poles at and below ground level

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

and

∟ UETDREL002 Comply with environmental requirements

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

or

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRAI004 Treat poles

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UETDREL002 Comply with environmental requirements

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRDO001 Inspect overhead poles, structures and electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDO005 Maintain overhead energised low voltage distribution network

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS008 Install and maintain electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

and

∟ UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

∟ UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

or

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT013 Perform rail traction switching operations to a given schedule

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live

	electrical apparatus
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
	∟ UETDRIS007 Install and maintain distribution overhead conductors and cables
	∟ UETDRIS012 Install and maintain poles, structures and hardware
	∟ UETDRRT001 Install overhead rail traction configurations
	∟ UETDRRT002 Install overhead traction components and equipment
	∟ UETDRRT004 Install traction overhead wiring systems
UETDRSB001	Perform substation switching operations to a given schedule
UETDRVC003	Control vegetation for powerline work
	∟ AHCMOM213 Operate and maintain chainsaws
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Qualification Mapping Information

This qualification replaces and is not equivalent to UET30719 Certificate III in ESI – Power Systems – Rail Traction

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET30821 Certificate III in ESI - Distribution Underground

Modification History

Release 2. Updated superseded Native elective units. Moved UETDRDU001 and UETDRDU017 from Group B to Group A.

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Qualification Description

This qualification provides the skills and knowledge to work in the electricity supply industry (ESI) as a Distribution Underground Cable Jointer.

This qualification covers the installation and maintenance of low voltage (LV) and high voltage (HV) underground cables, services and electrical equipment.

The application of the skills and knowledge described within the units in this qualification may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

A total of **23 units** comprising:

- **18 core units** listed below; plus
- **5 elective units**

The elective units are to be chosen as follows:

- **3 elective units** selected from Group A listed below
- **2 elective units** may be selected from Group A or Group B elective units listed below, of which, 1 elective unit may be selected, with appropriate contextualisation, from a qualification in this or any other endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

CPCCLDG3001	Licence to perform dogging
TLILIC0005	Licence to operate a boom-type elevating work platform (boom length 11 metres or more)
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0044	Solve problems in multiple path circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0046 Solve problems in single path circuits
UEECD0046	Solve problems in single path circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEEEL0020	Solve problems in low voltage a.c. circuits ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices and ∟ UEECD0043 Solve problems in direct current circuits or ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits
UEEEL0021	Solve problems in magnetic and electromagnetic devices ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace and ∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UETDRDU002 Inspect underground electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

and

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

or

∟ UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRDU009 Install, test and verify distribution underground cable installations

∟ CPCCLDG3001 Licence to perform dogging

∟ TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDU002 Inspect underground electrical apparatus

∟ UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

∟ UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS008 Install and maintain electrical apparatus

∟ UETDRIS011 Install and maintain low voltage underground services

UETDRDU013	Joint, terminate and maintain high voltage underground polymeric cable
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU015	Joint, terminate and maintain low voltage underground polymeric cable
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDREL001	Apply environmental requirements
UETDREL004	Operate plant and equipment in the vicinity of live electrical apparatus
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDREL005	Work safely in the vicinity of live electrical apparatus
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDRIS008	Install and maintain electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

and

∟ UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

∟ UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

or

∟ UETDRIS007 Install and maintain distribution overhead conductors and cables

∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS011 Install and maintain low voltage underground services

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Group A

UETDRDU001	Conduct high voltage testing of underground power cable system
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU007	Install and maintain underground public lighting
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU010	Joint, terminate and maintain energised low voltage underground paper insulated cable
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and

specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDU014 Joint, terminate and maintain low voltage underground paper insulated cable

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDU011 Joint, terminate and maintain energised low voltage underground polymeric cable

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDU012 Joint, terminate and maintain high voltage underground paper insulated cable

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDU014	Joint, terminate and maintain low voltage underground paper insulated cable
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU016	Lay power cables
UETDRDU017	Locate faults in underground power cables
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU019	Transition joint high voltage paper insulated cable to high voltage polymeric cable
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Group B

UETDREL003 Identify and apply controls for alternate supplies on the distribution network

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS018 Perform low voltage field switching operation to a given schedule

UETDRIS014 Install and replace energy meters and associated equipment

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL001 Apply environmental requirements

UETDRIS015 Install low voltage mobile generator

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRIS017	Perform high voltage field switching operation to a given schedule
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
	∟ UETDRIS018 Perform low voltage field switching operation to a given schedule
UETDRIS018	Perform low voltage field switching operation to a given schedule
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRIS023	Develop and validate high voltage distribution switching programs

UETDRIS024	Develop and validate low voltage distribution switching programs
UETDRSB001	Perform substation switching operations to a given schedule

Qualification Mapping Information

This qualification replaces and is equivalent to UET30819 Certificate III in ESI - Power Systems - Distribution Cable Jointing

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET30921 Certificate III in ESI - Very Remote Community Utilities

Modification History

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Training Package Release 2.0.

Qualification Description

This qualification provides the skill and knowledge to work on very remote community utility systems as a remote community utilities worker in the electricity supply industry (ESI).

The qualification covers the skills and knowledge to operate, monitor and maintain generation power systems, distribution electrical network circuits and apparatus, and specialisations in power and water systems.

Combined Specialist – Power and Water Systems

This combined specialisation covers the skills and knowledge required to work on very remote community utility power and water systems.

Specialist – Power Systems

This specialisation covers the skills and knowledge required to install, operate, monitor and maintain distribution overhead and underground networks and customer connections. It also includes the skills and knowledge required to monitor and maintain renewable energy systems.

Specialist – Water Systems

This specialisation covers the skills and knowledge required to install, operate, monitor and maintain water systems.

All work on power systems will be undertaken on isolated assets other than for testing purposes.

The use of support plant and equipment to perform these tasks and environmental requirements also play a part in this qualification.

Please note: RTO to insert on the testamur, the specialisation selected from the specialist elective unit group below.

Very Remote Communities: means a community with restricted access and very little accessibility of goods, services and opportunities for social interaction. Supporting information on the classification of a very remote community can be defined using the latest version of Accessibility/Remoteness Index of Australia (ARIA) (excluding mine sites).

Isolated: Means disconnected from all possible sources of electricity supply by means that prevent unintentional energisation of the apparatus and that are assessed as a suitable step in the process of making safe for access purposes. That is for high voltage (HV) (short-circuited and earthed) and for low voltage (LV) (short-circuited to the neutral).

The application of the skills and knowledge described within the units in this qualification may

require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

A total of **24 units** comprising:

Combined Specialisation - Power and Water Systems

- **17 core units** listed below, plus
- **7 elective units** from a combination of Group A and Group B below.

Specialisation – Power Systems

- **17 core units** listed below, plus
- **7 elective units** from Group A listed below.

Specialisation– Water Systems

- **17 core units** listed below, plus
- **7 elective units** from Group B listed below.

Up to 1 elective unit may be selected, with appropriate contextualisation, from a qualification in this or any endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0044	Solve problems in multiple path circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

	∟ UEECD0046 Solve problems in single path circuits
UEECD0046	Solve problems in single path circuits
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEERE0007	Conduct periodic maintenance of remote area power supply generator sets
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEERE0019 Maintain safety and tidiness of remote area power supply systems
	∟ UEERE0023 Work safely with remote area power supply systems
	and
	∟ UEECD0043 Solve problems in direct current circuits
	or
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
UEERE0018	Maintain and repair remote area power generation facilities
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEERE0007 Conduct periodic maintenance of remote area power supply generator sets
	∟ UEERE0019 Maintain safety and tidiness of remote area power supply systems
	∟ UEERE0023 Work safely with remote area power supply systems
	and

	∟ UEECD0043 Solve problems in direct current circuits or ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits
UEERE0019	Maintain safety and tidiness of remote area power supply systems ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEERE0023 Work safely with remote area power supply systems
UEERE0023	Work safely with remote area power supply systems ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEERE0041	Maintain operation of remote area power generation plant ∟ UEERE0018 Maintain and repair remote area power generation facilities
UETDREL001	Apply environmental requirements
UETDREL004	Operate plant and equipment in the vicinity of live electrical apparatus ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDREL005	Work safely in the vicinity of live electrical apparatus ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDRRC005	Maintain, test and verify power systems in a very remote community ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEERE0007 Conduct periodic maintenance of remote area power supply generator sets ∟ UEERE0018 Maintain and repair remote area power generation facilities ∟ UEERE0019 Maintain safety and tidiness of remote area power supply systems

∟ UEERE0023 Work safely with remote area power supply systems

∟ UEERE0041 Maintain operation of remote area power generation plant

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRRC006 Perform low voltage electricity network switching in a very remote community

∟ UETDRRC007 Solve problems in electrical network apparatus in a very remote community

∟ UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

UETDRRC006 Perform low voltage electricity network switching in a very remote community

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

∟ UEECD0007 Apply work health and safety regulations, codes and

practices in the workplace

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRRC006 Perform low voltage electricity network switching in a very remote community

∟ UETDRRC007 Solve problems in electrical network apparatus in a very remote community

Group A: Power Systems

UEERE0006 Conduct periodic maintenance of remote area power supply battery banks

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEERE0019 Maintain safety and tidiness of remote area power supply systems

∟ UEERE0023Work safely with remote area power supply systems

and

∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UEERE0008 Conduct periodic maintenance of remote area power supply photovoltaic arrays

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEERE0019 Maintain safety and tidiness of remote area power supply systems

∟ UEERE0023Work safely with remote area power supply systems

and

∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UEERE0009 Conduct periodic maintenance of remote area power supply wind generators

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEERE0019 Maintain safety and tidiness of remote area power supply systems

∟ UEERE0023Work safely with remote area power supply systems

and

∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UETDRDO001 Inspect overhead poles, structures and electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU015	Joint, terminate and maintain low voltage underground polymeric cable
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU016	Lay power cables
UETDRIS007	Install and maintain distribution overhead conductors and cables
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
	∟ UETDRIS012 Install and maintain poles, structures and hardware

UETDRIS012	Install and maintain poles, structures and hardware
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRRC001	Install and maintain low voltage overhead services in a very remote community
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
	∟ UETDRRC006 Perform low voltage electricity network switching in a very remote community
	∟ UETDRRC007 Solve problems in electrical network apparatus in a very remote community
	∟ UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community
UETDRRC002	Install and maintain low voltage underground services in a very remote community
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL004 Operate plant and equipment in the vicinity of live

electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRRC006 Perform low voltage electricity network switching in a very remote community

∟ UETDRRC007 Solve problems in electrical network apparatus in a very remote community

∟ UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

UETDRRC003 Install and maintain public lighting systems in a very remote community

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRRC006 Perform low voltage electricity network switching in a very remote community

∟ UETDRRC007 Solve problems in electrical network apparatus in a very remote community

∟ UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

UETDRRC004 Install and replace energy meters and associated equipment in a very remote community

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UETDREL001 Apply environmental requirements

∟ UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRRC006 Perform low voltage electricity network switching in a very remote community

∟UETDRRC007 Solve problems in electrical network apparatus in a very remote community

∟UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Group B: Water Systems

NWPCAD004	Maintain catchment and surrounding areas
NWPCAD019	Monitor and operate groundwater extraction
NWPGEN017	Apply the risk management principles of the water industry standards, guidelines and legislation
NWPGEN020	Sample and test source or drinking water
NWPGEN021	Sample and test wastewater
NWPGEN023	Use maps, plans, drawings and details
NWPGEN027	Monitor and operate pump stations
NWPNET020	Control electrical risk on metallic pipes
NWPNET036	Perform leak detection
NWPNET038	Install metering equipment
NWPNET039	Maintain and repair network assets for drinking water
NWPNET040	Maintain and repair network assets for wastewater
NWPTRT005	Monitor and operate water treatment processes
NWPTRT027	Monitor and operate wastewater treatment processes

Qualification Mapping Information

This qualification replaces and is equivalent to UET30919 Certificate III in ESI - Remote Community Utilities Worker

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET40422 Certificate IV in ESI - Network Systems

Modification History

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Qualification Description

This qualification provides the skills and knowledge to work on network systems in the electricity supply industry (ESI).

This qualification covers work on the network systems in the specific fields of live line transmission, live line distribution, live line rail traction and/or installation and maintenance of specialised underground cables. These roles may lead or supervise work teams and work in transmission, distribution, rail or cable jointing. The qualification allows individuals to specialise in one of the following areas.

Group A: Distribution High Voltage Live Line

This specialisation covers the skills and knowledge required to work on high voltage (HV) live distribution networks.

Group B: Transmission Live Line

This specialisation covers the skills and knowledge required to work on live line transmission networks.

Group C: Specialised Cable

This specialisation covers the skills and knowledge required to install and maintain gas and oil and/or polymeric 33kv and above underground cables.

Group D: Switching

This specialisation covers the skills and knowledge required to coordinate switching and/or develop switching schedules.

Group E: Testing

This specialisation covers the skills and knowledge required for certifying revenue metering instruments and/or injection testing of secondary devices.

Please note: RTO to insert on the testamur, the specialist elective unit group selected from the group choice below.

The skills and knowledge described within the units in this qualification may require a licence or permit to practice in the workplace.

Additional and/or other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing the qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

Total number of units

Specialisations

Distribution High Voltage Live Line

Total of **14 units** of competency

- **11 core units** listed below, plus
- **3 elective units** from Group A.

Transmission Live Line

Total of **14 units** of competency

- **11 core units** listed below, plus
- **3 elective units** from Group B.

Specialised Cable

Total of **14 units** of competency

- **11 core units** listed below, plus
- **3 elective units** from Group C.

Switching

Total of **14 units** of competency

- **11 core units** listed below, plus
- **3 elective units** from Group D.

Testing

Total of **13 units** of competency

- **11 core units** listed below, plus
- **2 elective units** from Group E.

Up to 1 of the elective units may be selected, with appropriate contextualisation, from Group F – General electives or a qualification in this or any endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0044	Solve problems in multiple path circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UEECD0046 Solve problems in single path circuits
UEECD0046	Solve problems in single path circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEEEL0020	Solve problems in low voltage a.c. circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UEEEL0021 Solve problems in magnetic and electromagnetic devices and ∟UEECD0043 Solve problems in direct current circuits or ∟UEECD0044 Solve problems in multiple path circuits ∟UEECD0046 Solve problems in single path circuits
UEEEL0021	Solve problems in magnetic and electromagnetic devices ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace and ∟UEECD0043 Solve problems in direct current circuits or ∟UEECD0044 Solve problems in multiple path circuits ∟UEECD0046 Solve problems in single path circuits
UETDREL001	Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDRIS028 Implement and monitor environmental policies and procedures

UETDRIS029 Implement and monitor organisational WHS/OHS policies, procedures and programs

Group A: Distribution High Voltage Live Line

UETDRDO003 Maintain energised high voltage distribution overhead electrical apparatus (glove and barrier)

UETDRDO004 Maintain energised high voltage distribution overhead electrical apparatus (stick)

UETDRIS020 Contribute to coordinated high voltage live work

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

Group B: Transmission Live Line

UETDRIS020 Contribute to coordinated high voltage live work

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTO010 Maintain energised transmission lines using barehand techniques from a helicopter

∟UETDRTO012 Maintain energised transmission lines using live work stick techniques

UETDRTO011 Maintain energised transmission lines using live work barehand techniques

∟UETDRTO012 Maintain energised transmission lines using live work stick techniques

UETDRTO012 Maintain energised transmission lines using live work stick techniques

Group C: Specialised Cable

UETDRDU012 Joint, terminate and maintain high voltage underground paper insulated cable

∟UEECD0007 Apply work health and safety regulations, codes and

	practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU013	Joint, terminate and maintain high voltage underground polymeric cable
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL001 Apply environmental requirements
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDU020	Joint, terminate and maintain gas and oil filled underground cables
UETDRDU021	Joint, terminate and maintain underground polymeric cable 33kV and above
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

∟ UETDREL001 Apply environmental requirements

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDU022 Maintain gas and oil pressure systems for underground cables

∟ UETDRDU020 Joint, terminate and maintain gas and oil filled underground cables

Group D: Switching

UETDRIS021 Coordinate and direct switching programs

UETDRIS022 Coordinate permit procedures

UETDRIS023 Develop and validate high voltage distribution switching programs

UETDRIS024 Develop and validate low voltage distribution switching programs

Group E: Testing

UEEEL0019 Solve problems in direct current (d.c.) machines

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

and

∟ UEECD0043 Solve problems in direct current circuits

or

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

UETDRTS028 Calibrate, verify and certify revenue metering/energy measurement instruments

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0019 Solve problems in direct current (d.c.) machines

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS039 Perform current injection testing of secondary devices

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

Group F: General

BSBINS402 Coordinate workplace information systems

BSBLDR413 Lead effective workplace relationships

BSBLDR414 Lead team effectiveness

BSBOPS402 Coordinate business operational plans

BSBSTR402 Implement continuous improvement

UETDRIS030 Install high voltage mobile generator

UETDRRT015 Maintain energised rail traction networks

UETDRVC012 Coordinate vegetation control operations

∟UETDREL002 Comply with environmental requirements

∟UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

∟UETDRVC001 Apply work health and safety requirements for powerline vegetation control

or

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UETDREL001 Apply environmental requirements

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

Qualification Mapping Information

This qualification replaces and is not equivalent to UET40421 Certificate IV in ESI - Network Systems

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET40522 Certificate IV in ESI - Substations

Modification History

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Qualification Description

This qualification provides the skills and knowledge to work in power system substations in the electricity supply industry (ESI).

This qualification covers selecting, installing, setting up, testing, inspecting, fault finding, repairing and maintaining electrical systems within substations. It includes switching, maintaining circuit breakers and transformers, and diagnosing and rectifying faults. Options are available for skills to be obtained in high current direct current (d.c.) switchgear and equipment, installation of high voltage (HV) plant and equipment and/or the maintenance and commissioning of discrete protection and control systems.

The skills and knowledge described within the units in this qualification may require a licence or permit to practice in the workplace.

Additional and/or other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing the qualification.

Entry Requirements

The entry requirement for this qualification is:

- a current Electrician licence or its equivalent issued in an Australian state or territory

or

- Certificate III in Electrotechnology Electrician qualification or the equivalent issued in an Australian state or territory (see note below)

Note: UET40522 Certificate IV in ESI – Substations can be undertaken in conjunction with the entry requirement qualification listed above as long as the following conditions are met:

- must be permitted within jurisdictional training and regulatory requirements;
- at least one third of the total units of competency required for completion of the entry requirement qualification must be met prior to commencing the Certificate IV in ESI – Substations; and,
- the Certificate III entry requirement qualification must be successfully completed prior to issuing the Certificate IV in ESI – Substations.

Packaging Rules

A total of **18 units of competency** comprising:

12 core units listed below, plus:

6 electives units from Group A listed below, of which, **1 elective unit** may be selected, with appropriate contextualisation, from Group B listed below or from a qualification in this or any other endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0044	Solve problems in multiple path circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UEECD0046 Solve problems in single path circuits
UEECD0046	Solve problems in single path circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEEEL0020	Solve problems in low voltage a.c. circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UEEEL0021 Solve problems in magnetic and electromagnetic devices and ∟UEECD0043 Solve problems in direct current circuits or

	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
UEEEL0021	Solve problems in magnetic and electromagnetic devices
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	and
	∟ UEECD0043 Solve problems in direct current circuits
	or
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
UETDREL005	Work safely in the vicinity of live electrical apparatus
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDRIS028	Implement and monitor environmental policies and procedures
UETDRIS029	Implement and monitor organisational WHS/OHS policies, procedures and programs
UETDRSB006	Inspect substations
UETDRSB007	Install and maintain substation direct current systems
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

Group A: Elective units

UETDRIS031	Maintain insulating oil
UETDRIS032	Solve problems in network equipment
	∟ UEECD0007 Apply work health and safety regulations, codes and

	practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
UETDRIS033	Solve problems in network protection
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
	∟ UETDRIS032 Solve problems in network equipment
UETDRSB001	Perform substation switching operations to a given schedule
UETDRSB002	Commission and maintain discrete control and protection systems
UETDRSB003	Commission and maintain distribution field devices
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
	∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRSB004 Conduct surveys using thermovision techniques

UETDRSB005 Diagnose and resolve faults in a substation environment

UETDRSB008 Install high current d.c. equipment and switchgear

UETDRSB009 Install high voltage plant and equipment

UETDRSB010 Maintain capacitor bank equipment

UETDRSB011 Maintain high current d.c. equipment and switchgear

UETDRSB012 Maintain high voltage circuit breakers

UETDRSB013 Maintain on-load tap changers (OLTC)

UETDRSB014 Maintain power and instrument transformers

UETDRSB015 Maintain static var compensators (SVC)

UETDRSB016 Maintain synchronous condensers

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

Group B: Imported elective units

BSBINS402	Coordinate workplace information systems
BSBLDR413	Lead effective workplace relationships
BSBLDR414	Lead team effectiveness
BSBOPS402	Coordinate business operational plans
BSBSTR402	Implement continuous improvement

Qualification Mapping Information

This qualification replaces and is equivalent to UET40521 Certificate IV in ESI - Power Systems Substations

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UET60222 Advanced Diploma of ESI - Power Systems

Modification History

Release 1. This is the first release of this qualification in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Qualification Description

This qualification provides the skills and knowledge to work in the electricity supply industry within distribution and transmission networks. The qualification allows individuals to specialise in one of the following areas.

Design and Drafting

This specialisation covers the skills and knowledge for designing and drafting transmission and distribution networks, and the use of CAD software and drawing management systems.

Design

This specialisation covers the skills and knowledge for designing transmission and distribution networks.

System Operations Distribution

This specialisation covers the skills and knowledge for monitoring, operating, coordinating and maintaining distribution networks.

System Operations Transmission

This specialisation covers the skills and knowledge for monitoring, operating, coordinating and maintaining transmission networks.

Protection (Testing)

This specialisation covers the skills and knowledge for commissioning, maintaining, diagnosing faults of complex protection and control systems.

Protection and Metering (Testing)

This specialisation covers the skills and knowledge for commissioning, maintaining, diagnosing faults of metering systems.

Please note: RTO to insert on the testamur, the specialisation selected from the specialist group choice below.

The skills and knowledge described within the units in this qualification may require a licence or permit to practice in the workplace.

Additional and/or other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing the qualification.

Entry Requirements

There are no entry requirements for this qualification

Packaging Rules

Total number of units

Specialisations

Design and Drafting

Total of **14 units** of competency

- **6 core units** listed below, plus
- **8 electives** from Group A and/or B, with up to 3 from Group G

Design

Total of **14 units** of competency

- **6 core** units listed below, plus
- **8 electives** from Group B

System Operations Distribution

Total of **13 units** of competency

- **6 core** units listed below, plus
- **7 electives** from Group C

System Operations Transmission

Total of **12 units** of competency

- **6 core** units listed below, plus
- **6 electives** from Group D

Protection (Testing)

Total of **14 units** of competency

- **6 core** units listed below, plus
- **8 electives** from Group E

Protection and Metering (Testing)

Total of **14 units** of competency

- **6 core** units listed below, plus
- **8 electives** from Group F

Up to 1 of the elective units may be selected, with appropriate contextualisation, from a qualification in this or any endorsed Training Package, provided the selected unit contributes to the vocational outcome of the qualification.

Where imported units are selected, care must be taken to ensure all prerequisite units specified are complied with. Prerequisites attached to any of the units must be obtained and are additional

to the number of units required for the qualification.

Where a prerequisite is attached to a unit it is identified by the symbol ∟.

Core units

UEECD0007	Apply work health and safety regulations, codes and practices in the workplace
UEECD0044	Solve problems in multiple path circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UEECD0046 Solve problems in single path circuits
UEECD0046	Solve problems in single path circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEEEL0020	Solve problems in low voltage a.c. circuits ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UEEEL0021 Solve problems in magnetic and electromagnetic devices and ∟UEECD0043 Solve problems in direct current circuits or ∟UEECD0044 Solve problems in multiple path circuits ∟UEECD0046 Solve problems in single path circuits
UEEEL0021	Solve problems in magnetic and electromagnetic devices ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace and ∟UEECD0043 Solve problems in direct current circuits or ∟UEECD0044 Solve problems in multiple path circuits ∟UEECD0046 Solve problems in single path circuits

Group A: Design and Drafting

UEECS0033	Use engineering applications software on personal computers
MEM30031A	Operate computer-aided design (CAD) system to produce basic drawing elements
MEM30033A	Use computer-aided design (CAD) to create and display 3-D models ∟ MEM30031A Operate computer-aided design (CAD) system to produce basic drawing elements
UETDRDS023	Draft and layout distribution substation minor upgrade ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEEEL0020 Solve problems in low voltage a.c. circuits ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices ∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDS024	Draft and layout overhead distribution extension ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEEEL0020 Solve problems in low voltage a.c. circuits ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices ∟ UETDREL005 Work safely in the vicinity of live electrical apparatus
UETDRDS025	Draft and layout street lighting system ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and

specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS026 Draft and layout underground distribution extension

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS028 Prepare and manage detailed construction plans for electrical infrastructure

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Group B: Design

UEECS0033 Use engineering applications software on personal computers

UETDRDS015 Assess distributed energy resource connections to a distribution network

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDS027 Investigate quality of supply issues

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS016 Coordinate and perform line and easement surveys

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRDS028 Prepare and manage construction plans for electrical infrastructure

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS017 Design customer substations

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS018 Design distribution protection systems

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and

specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS019 Design distribution substations

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS020 Design overhead distribution systems

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS021 Design public lighting systems

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS022 Design underground distribution systems

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS027 Investigate quality of supply issues

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRDS028 Prepare and manage construction plans for electrical infrastructure

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Group C: Systems Operations Distribution

UETDRSO012 Coordinate and manage distribution and sub-transmission network access and activities

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRSO015 Develop and validate distribution and sub-transmission switching programs

∟ UETDRSO016 Develop and validate low voltage switching programs

∟ UETDRSO020 Operate SCADA equipment

UETDRSO015 Develop and validate distribution and sub-transmission switching programs

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRSO016 Develop and validate low voltage switching programs

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRSO018 Dispatch and monitor field staff activities

UETDRSO019 Manage supply and demand in distribution and sub-transmission networks

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDRSO012 Coordinate and manage distribution and sub-transmission network access and activities

∟UETDRSO015 Develop and validate distribution and sub-transmission switching programs

∟UETDRSO020 Operate SCADA equipment

UETDRSO020 Operate SCADA equipment

UETDRSO021 Respond to protection operations

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDRSO020 Operate SCADA equipment

Group D: Systems Operations Transmission

UETDRSO013 Coordinate and manage transmission network access and activities

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRSO017 Develop and validate transmission switching programs

∟ UETDRSO020 Operate SCADA equipment

UETDRSO014 Coordinate operations in a regulated energy market

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRSO017 Develop and validate transmission switching programs

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRSO018 Dispatch and monitor field staff activities

UETDRSO020 Operate SCADA equipment

UETDRSO021 Respond to protection operations

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDRSO020 Operate SCADA equipment

Group E: Protection (Testing)

UEECD0010	Compile and produce an energy sector detailed report
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0036	Provide engineering solutions for problems in complex multiple path circuits
UEECD0039	Provide solutions to basic engineering computational problems ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDREL005	Work safely in the vicinity of live electrical apparatus ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDRTS029	Commission and maintain communication equipment ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UEECD0010 Compile and produce an energy sector detailed report ∟UEECD0019 Fabricate, assemble and dismantle utilities industry components ∟UEECD0044 Solve problems in multiple path circuits ∟UEECD0046 Solve problems in single path circuits ∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟UEEEL0020 Solve problems in low voltage a.c. circuits ∟UEEEL0021 Solve problems in magnetic and electromagnetic devices ∟UETDREL005 Work safely in the vicinity of live electrical apparatus ∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents
UETDRTS032	Commission and maintain metering schemes ∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟UEECD0010 Compile and produce an energy sector detailed report ∟UEECD0019 Fabricate, assemble and dismantle utilities industry components ∟UEECD0044 Solve problems in multiple path circuits ∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS033 Commission and maintain network protection and control systems

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS034 Commission and maintain voltage regulating equipment

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation

and restoration documents

UETDRTS035 Conduct evaluation of network protection and control system faults

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS037 Maintain and calibrate protection relays and meters

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS038 Perform accuracy checks on instrument transformers

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS039 Perform current injection testing of secondary devices

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

Group F: Protection and Metering (Testing)

UEECD0010	Compile and produce an energy sector detailed report
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0036	Provide engineering solutions for problems in complex multiple path circuits
UEECD0039	Provide solutions to basic engineering computational problems ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEEEL0019	Solve problems in direct current (d.c.) machines ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices and ∟ UEECD0043 Solve problems in direct current circuits or ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits
UETDREL005	Work safely in the vicinity of live electrical apparatus ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UETDRTS028	Calibrate, verify and certify revenue metering/energy measurement instruments ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEEEL0019 Solve problems in direct current (d.c.) machines ∟ UEEEL0020 Solve problems in low voltage a.c. circuits ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS029 Commission and maintain communication equipment

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS030 Commission and maintain complex energy/revenue metering schemes

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS031 Commission and maintain energy/revenue metering schemes

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS031 Commission and maintain energy/revenue metering schemes

∟UEECD0007 Apply work health and safety regulations, codes and

practices in the workplace

∟ UEECD0010 Compile and produce an energy sector detailed report

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS032 Commission and maintain metering schemes

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0010 Compile and produce an energy sector detailed report

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS033 Commission and maintain network protection and control systems

∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟ UEECD0010 Compile and produce an energy sector detailed report

∟ UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟ UEECD0044 Solve problems in multiple path circuits

∟ UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS034 Commission and maintain voltage regulating equipment

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS035 Conduct evaluation of network protection and control system faults

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation

and restoration documents

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS037 Maintain and calibrate protection relays and meters

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

UETDRTS038 Perform accuracy checks on instrument transformers

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0010 Compile and produce an energy sector detailed report

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟ UEEEL0020 Solve problems in low voltage a.c. circuits

∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Group G: General Electives

BSBFIN501	Manage budgets and financial plans
BSBHRM523	Coordinate the learning and development of teams and individuals
BSBINS501	Implement information and knowledge management systems
BSBLDR522	Manage people performance
BSBOPS502	Manage business operational plans
BSBOPS505	Manage organisational customer service
BSBPEF501	Manage personal and professional development
BSBSTR501	Establish innovative work environments
BSBSTR502	Facilitate continuous improvement
BSBSUS511	Develop workplace policies and procedures for sustainability
BSBTWK502	Manage team effectiveness
TLIF0021	Administer the implementation of fatigue management strategies
TLIF2010	Apply fatigue management strategies
UEECD0019	Fabricate, assemble and dismantle utilities industry components ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECD0030	Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software ∟ UEECS0033 Use engineering applications software on personal computers

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEECD0031 Prepare engineering drawings using manual drafting and CAD for electrotechnology applications

and

∟UEECD0043 Solve problems in direct current circuits

or

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

UEECD0031	Prepare engineering drawings using manual drafting and CAD for electrotechnology applications

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECS0033 Use engineering applications software on personal computers

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEECD0032	Produce detailed electrotechnology/utilities drawings using CAD equipment and software

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0019 Fabricate, assemble and dismantle utilities industry components

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEECD0031 Prepare engineering drawings using manual drafting and CAD for electrotechnology applications

∟UEECD0030 Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software

∟UEECS0033 Use engineering applications software on personal computers

and

∟UEECD0043 Solve problems in direct current circuits

	or
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
UEECD0036	Provide engineering solutions for problems in complex multiple path circuits
UEECD0039	Provide solutions to basic engineering computational problems
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEECO0001	Estimate electrotechnology projects
UEECS0033	Use engineering applications software on personal computers
UEEEL0019	Solve problems in direct current (d.c.) machines
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
	∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
	and
	∟ UEECD0043 Solve problems in direct current circuits
	or
	∟ UEECD0044 Solve problems in multiple path circuits
	∟ UEECD0046 Solve problems in single path circuits
UEEEL0062	Provide engineering solutions to problems in complex polyphase power circuits
	∟ UEECD0036 Provide engineering solutions for problems in complex multiple path circuits
	∟ UEEEL0020 Solve problems in low voltage a.c. circuits
UEEIC0012	Develop structured programs to control external devices
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace
UEPOPS030	Coordinate power generation
UEPOPS038	Evaluate cost estimations and initiate appropriate solutions
	∟ UEECO0001 Estimate electrotechnology projects
UETDRIS025	Diagnose and resolve faults in distribution systems
	∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0019 Fabricate, dismantle, assemble of utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRIS026 Diagnose and resolve faults in electrical apparatus

∟UETDRIS032 Solve problems in network equipment

UETDRIS026 Diagnose and resolve faults in electrical apparatus

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0019 Fabricate, dismantle, assemble of utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟UETDREL005 Work safely in the vicinity of live electrical apparatus

∟UETDRIS032 Solve problems in network equipment

UETDRIS027 Diagnose and resolve faults in transmission systems

∟UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

∟UEECD0019 Fabricate, dismantle, assemble of utilities industry components

∟UEECD0044 Solve problems in multiple path circuits

∟UEECD0046 Solve problems in single path circuits

∟UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

∟UEEEL0020 Solve problems in low voltage a.c. circuits

∟UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS026 Diagnose and resolve faults in electrical apparatus

∟ UETDRIS032 Solve problems in network equipment

UETDRIS028	Implement and monitor environmental policies and procedures
UETDRIS029	Implement and monitor organisational WHS/OHS policies, procedures and programs
UETDRIS032	Solve problems in network equipment ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0019 Fabricate, dismantle, assemble of utilities industry components ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEEEL0020 Solve problems in low voltage a.c. circuits ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices
UETDRIS033	Solve problems in network protection ∟ UEECD0007 Apply work health and safety regulations, codes and practices in the workplace ∟ UEECD0019 Fabricate, dismantle, assemble of utilities industry components ∟ UEECD0044 Solve problems in multiple path circuits ∟ UEECD0046 Solve problems in single path circuits ∟ UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications ∟ UEEEL0020 Solve problems in low voltage a.c. circuits ∟ UEEEL0021 Solve problems in magnetic and electromagnetic devices

∟ UETDREL005 Work safely in the vicinity of live electrical apparatus

∟ UETDRIS032 Solve problems in network equipment

Qualification Mapping Information

This qualification replaces and is not equivalent to UET60221 Advanced Diploma of ESI - Power Systems

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETSS00054 Maintain Energised Rail Traction Networks Skill Set

Modification History

Release 1. This is the first release of this Skill Set in the Transmission, Distribution and Rail Sector.

Description

This Skill Set reflects the work required by lineworkers when performing energised maintenance of the rail traction network.

Pathways Information

This Skill Set is part of the UET Transmission, Distribution and Rail Sector Training Package.

Entry requirement into this Skill Set requires the user to hold a Certificate III in ESI - Rail Traction.

Licensing/Regulatory Information

The application of the skills and knowledge described within the unit in this skill set may require a licence/registration to practice in the workplace.

Skill Set Requirements

A total of **1 unit of competency** must be attained.

UETDRRT015 Maintain energised rail traction networks

Target Group

The Skill Set is targeted at electricity supply industry (ESI) workers required to provide maintenance on energised rail traction networks.

Suggested words for Statement of Attainment

This UETSS00054 Maintain Energised Rail Traction Networks Skill Set from the UET Transmission, Distribution and Rail Sector Training Package meets the industry requirements for maintaining energised rail traction networks.

Custom Content Section

Not applicable.

UETSS00055 Work Safely Around Powerlines as an Ordinary Person Skill Set

Modification History

Release 1. This is the first release of this Skill Set in the UET Transmission, Distribution and Rail Training Package Release 5.0.

Description

This Skill Set is for ordinary persons (that are not associated with electrical work) to perform work activities safely around powerlines.

Pathways Information

This Skill Set is part of the UET Transmission, Distribution and Rail Sector Training Package and provides a pathway for ordinary persons to perform their normal work activities safely around powerlines.

Licensing/Regulatory Information

Not applicable.

Skill Set Requirements

A total of **1 unit of competency** must be attained.

UETDRCD001 Work safely around powerlines as an ordinary person

Target Group

The Skill Set is targeted ordinary persons (that are not associated with electrical work) to perform their work activities safely around powerlines.

Suggested words for Statement of Attainment

This UETSS00055 Work Safely Around Powerlines as an Ordinary Person Skill Set from the UET Transmission, Distribution and Rail Sector Training Package meets the industry requirements for ordinary persons to perform work activities safely around powerlines.

Custom Content Section

Not applicable.

UETDRAI001 Inspect and test poles at and below ground level

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to inspect and test poles at and below ground level in the electricity supply industry (ESI).

It includes testing poles using invasive or non-invasive methods utilising plant, asset inspection tools and equipment. It also includes analysing and recording testing results.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

and

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

or

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Asset Inspection

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to inspect and test pole	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Liaison and communication with stakeholders is carried out in accordance with workplace requirements
	1.7 Work permit/approval is organised in accordance with workplace requirements
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
	1.9 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out inspection and testing of pole	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Pole is visually inspected at and below ground level in accordance with the work plan and workplace requirements

	2.5	Test equipment is set up and used in accordance with manufacturer's instructions and workplace requirements
	2.6	Test results are analysed and recorded in accordance with workplace requirements
	2.7	Pole is labelled or marked to indicate its condition in accordance with workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Work permits are signed off, if applicable, in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDREL18 Inspect and treat poles and inspect electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRAI001 Inspect and test poles at and below ground level

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - manual handling
  - hazardous materials/substances
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- using plant, tools and equipment safely
- visually inspecting poles
- testing poles using at least two (2) of the following methods:
  - sounding
  - drilling
  - resistance
  - ultrasonic/acoustic
  - radiography
  - stress wave
  - dynamic (vibration)
  - mechanical
  - electromagnetic field
- using software applications or workplace documents for:
  - accessing and verifying existing data
  - capturing or recording data
  - analysing and recording results
- indicating pole condition by labelling/marking
- dealing with an unplanned event on at least one (1) occasion
- organising relevant work permits/approvals

- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - manual handling
  - hazardous materials/substances
  - visual inspection requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits/approvals
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- poles, including:
  - types
  - characteristics
  - types of defects
- electricity network construction types
- pole testing methods and procedures
- test equipment, including:
  - types
  - selection
  - operation and characteristics
  - calibration
  - handling
  - maintenance
  - storage
- procedures for interpretation and recording of results
- pole marking/labelling requirements
- reporting requirements
- software applications and/or data capturing documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used to inspect and test poles at and below ground level
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRAI002 Inspect poles, hardware and electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to inspect poles, hardware and electrical apparatus in the electricity supply industry (ESI).

It includes visual inspection of poles above ground, overhead conductors and/or cables, underground and overhead transition points, pole-mounted transformers, switchgear, hardware and/or earthing systems.

It also includes identifying and reporting defects.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Asset Inspection

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

outcomes.	demonstrate achievement of the element.
1 Prepare to inspect poles, hardware and electrical apparatus	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Plant, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Liaison and communication with stakeholders is carried out in accordance with workplace requirements
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
	1.8 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Inspect poles, hardware and electrical apparatus	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Working at heights and the use of plant, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Poles, hardware and electrical apparatus are visually inspected in accordance with the work plan and workplace requirements
	2.5 Pole, hardware and electrical apparatus inspection results are recorded
	2.6 Incidents or unplanned events are responded to in accordance with workplace requirements

3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit. No equivalent unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRAI002 Inspect poles, hardware and electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and industry and workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- visually inspecting poles, hardware and electrical apparatus
- identifying pole, hardware and electrical apparatus defects
- using software applications or workplace documents for:
  - accessing and verifying existing data
  - capturing or recording data
  - categorising and recording defects
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - visual inspection requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant and equipment

- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- poles, including:
  - types
  - characteristics
  - defects
- hardware, including:
  - types
  - characteristics
  - defects
- electrical apparatus, including:
  - types
  - characteristics
  - defects
- electricity networks, including:
  - construction types
  - identification of low voltage (LV)
  - identification of high voltage (HV)
  - clearances for overhead conductors, cables and structures
  - vegetation clearance profiles
- identification and categorisation of defects
- procedures for recording inspection results
- software applications and/or data capturing documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for inspecting poles, hardware and electrical apparatus
- applicable documentation, including workplace requirements, relevant industry standards,

equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRAI003 Perform minor maintenance on electricity network assets

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform minor maintenance on electricity network assets in the electricity supply industry (ESI).

It includes signage/labels, cover plates/guards/strips, minor vegetation control and completing workplace documentation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Asset Inspection

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to perform minor maintenance	**1.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.5	Hazards are identified, risks assessed and control measures identified and applied
	1.6	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7	Work permit/approval is organised in accordance with workplace requirements
	1.8	Liaison and communication with stakeholders is carried out in accordance with workplace requirements
	1.9	Worksite is prepared in accordance with the work plan and workplace requirements
	1.10	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Perform minor maintenance	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Minor vegetation control is performed in accordance with the work plan and workplace requirements
	2.5	Minor maintenance is performed on electricity network assets in accordance with the work plan and workplace

	requirements
	2.6 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.7 Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements
	3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4 Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.7 Work permits are signed off, if applicable, in accordance with workplace requirements
	3.8 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL20 Undertake minor vegetation control and routine minor maintenance of poles and electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRAI003 Perform minor maintenance on electricity network assets

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- performing minor vegetation control
- performing minor maintenance on electricity network assets
- organising relevant work permits/approvals
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice, and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - records, reports and documentation procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of work permits/approvals
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident

- minor vegetation control procedures
- types and procedures for minor maintenance on electricity network assets.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used to perform minor maintenance on electricity network assets
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRAI004 Treat poles

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to treat poles in the electricity supply industry (ESI).

It includes the types, handling and usage, transporting, storing and disposing of pole treatment applications.

It also includes environmental requirements and the completion of work documentation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Asset Inspection

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to treat poles	**1.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for work to be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4	Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5	Hazards are identified, risks assessed and control measures identified and applied
	1.6	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7	Worksite is prepared in accordance with the work plan and workplace requirements
	1.8	Liaison and communication with stakeholders is carried out in accordance with workplace requirements
	1.9	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Apply treatment to poles	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Treatment of poles is performed in accordance with work plan and workplace requirements
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements

3.2 Incidents or unplanned events are reported in accordance with workplace requirements

3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements

3.4 Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.6 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit. No Equivalent Unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRAI004 Treat poles

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - environmental requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- applying treatment applications to at least two (2) of the following pole types:
  - wood
  - steel
  - concrete
  - composite
- handling, transporting, storing and disposing of treatment applications
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice, and organisational workplace requirements, including:
  - WHS/OHS
  - environmental
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident

- procedures for work records, reports and documentation
- treatment applications, including:
  - types and characteristics
  - safe handling and application
  - storage
  - transport
  - disposal.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used to treat poles
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRAI005 Use asset inspection equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to use asset inspection equipment in the electricity supply industry (ESI).

It includes selecting and using asset inspection equipment to identify the condition of above ground overhead assets.

It also includes interpreting and recording information from asset inspection equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Asset Inspection

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to use asset inspection equipment	**1.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Tools, equipment and personal protective equipment (PPE) required for are determined, obtained and confirmed in working order
	1.4	Hazards are identified, risks assessed and control measures identified and applied
	1.5	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6	Liaison and communication with stakeholders is carried out in accordance with workplace requirements
	1.7	Worksite is prepared in accordance with the work plan and workplace requirements
	1.8	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Use asset inspection equipment	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Asset inspection equipment is used in accordance with manufacturer instructions and workplace requirements
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements

3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements

3.4 Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.5 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL17 Operate asset inspection machinery and equipment near live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRAI005 Use asset inspection equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- selecting, inspecting, using and storing asset inspection equipment
- interpreting and recording inspection results
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice, and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - working safely with asset inspection equipment
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- asset inspection equipment, including:
  - types

- selection
- operation and characteristics
- calibration
- handling
- maintenance
- storage

- procedures for interpretation and recording of results.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used for asset inspection
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice, operator manuals and manufacturer manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRCD001 Work safely around powerlines as an ordinary person

Modification History

Release 1. This is the first release of this unit of competency in the Transmission, Distribution and Rail Sector Training Package Release 5.0.

Application

This unit involves the skills and knowledge required by ordinary persons (that are not associated with electrical work) to perform work activities safely around powerlines.

It includes preparing, planning, working safely and monitoring compliance with the identified minimum approach distances. It also includes communicating with workers to prevent unsafe work activities and to stop the encroachment of workers, plant, tools and equipment inside the minimum approach distances.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Other conditions may apply under state and territory legislative and regulatory requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare and plan to work	**1.1** Relevant regulations, guidelines, codes of practice and organisational workplace requirements for working

	safely around powerlines		safely around powerlines are referred to
		1.2	Powerline infrastructure is identified
		1.3	Minimum approach distances for the work to be performed are determined
		1.4	Work is assessed for potential encroachment inside the minimum approach distances
		1.5	Hazards are identified, risks assessed and control measures identified and applied
		1.6	Safety observer role and responsibilities are discussed and confirmed in accordance with identified risks and control measures
		1.7	Communication method between the workers and safety observer is discussed and confirmed in accordance with identified risks and control measures
		1.8	Worksite plan is prepared and communicated to all relevant personnel on site
2	**Work safely around powerlines**	**2.1**	Prepared worksite plan is implemented and monitored
		2.2	Safety observer is positioned to observe the work in accordance with workplace requirements
		2.3	Communication methods between workers and safety observer are used in accordance with workplace requirements
		2.4	Minimum approach distances are maintained when the work is being performed
		2.5	Site conditions are monitored for change
		2.6	Hazard control measures are monitored in accordance with workplace requirements
3	**Respond to powerline incidents**	**3.1**	Incidents are responded to in accordance with workplace requirements
		3.2	Incidents are reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a newly created unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRCD001 Work safely around powerlines as an ordinary person

Modification History

Release 1. This is the first release of this unit of competency in the Transmission, Distribution and Rail Sector Training Package Release 5.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant regulations, guidelines, codes of practice and organisational workplace requirements for working safely around powerlines
- identifying powerline infrastructure
- determining relevant powerline voltages to determine minimum approach distance
- determining the ordinary person minimum approach distance(s)
- assessing the work for potential encroachment by person(s) into the minimum approach distance(s) and for at least one (1) of the following:
  - vegetation
  - plant and equipment
  - tools
  - material
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- determining communication method with safety observer in accordance with workplace requirements
- confirming safety observer is in position in accordance with workplace requirements
- preparing, assessing and where relevant communicating the worksite plan
- monitoring the site conditions for change
- responding to an incident
- reporting an incident.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant regulations, guidelines, codes of practice and organisational workplace requirements for working safely around powerlines, including:
  - minimum approach distances
  - emergency procedures

- hazard, risk assessment and risk control requirements, including potential hazards
- relevant powerline identification tools
- site conditions and the changes that can occur
- assessment of minimum approach distance encroachment for:
  - person(s)
  - vegetation
  - plant and equipment
  - tools
  - material
- visual powerline markers
- earthing of mobile plant
- events constituting an incident
- procedures for responding to an incident including:
  - techniques for exiting vehicle/plant
    - stay
    - call for help
    - wait
    - escape
- safety observer's:
  - role and responsibilities
  - communication methods
- basic electrical principles, including:
  - voltage, current and resistance
  - typical effects of current, including physiological effects and induced voltages
  - consequences of short circuits, including arc flash, and touch and step potentials
- infrastructure including:
  - voltages (distribution and transmission)
  - earthing systems
  - structures and associated equipment
  - layouts and configuration
  - basic electrical powerline protection
  - underground powerlines and associated equipment
- impact of earthworks around the powerline infrastructure
- impact of contact with the powerline infrastructure.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate powerline infrastructure
- applicable documentation, including workplace requirements, regulations, guidelines, codes of practice.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDO001 Inspect overhead poles, structures and electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to inspect overhead poles, structures and electrical apparatus in the electricity supply industry (ESI).

It includes visual inspection of poles and structures above ground, overhead conductors and cables, underground to overhead transition points, electrical apparatus, hardware and earthing systems.

It also includes identifying and reporting defects.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to inspect overhead poles, structures, and electrical apparatus	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Liaison and communication with stakeholders is carried out in accordance with workplace requirements
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
	1.8 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Inspect overhead poles, structures and electrical apparatus	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Poles, structures and electrical apparatus are visually inspected in accordance with the work plan and workplace requirements
	2.5 Inspection results are recorded in accordance with

		workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRDP11 Inspect overhead poles-structures and electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDO001 Inspect overhead poles, structures and electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- visually inspecting poles, structures and electrical apparatus
- identifying, categorising and recording defects
- undertaking inspections using at least one (1) of the following:
  - ground
  - vehicle
  - helicopter
  - fixed wing
  - remotely piloted aircraft (RPA)
  - elevated work platform (EWP)
  - ladder
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - visual inspection requirements

- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- poles, including:
  - types
  - characteristics
  - defects
- hardware, including:
  - types
  - characteristics
  - defects
- electrical apparatus, including:
  - types
  - characteristics
  - defects
- electricity networks, including:
  - construction types
  - identification of low voltage (LV)
  - identification of high voltage (HV)
  - clearances for overhead conductors, cables and structures
- identification and categorisation of defects
- procedures for recording inspection results.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for inspecting overhead poles, structures and electrical apparatus

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDO003 Maintain energised high voltage distribution overhead electrical apparatus (glove and barrier)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain energised high voltage (HV) overhead electrical apparatus using glove and barrier in the electricity supply industry (ESI).

It includes gaining network access approval, verifying site conditions and potential hazards, calculating physical loads and selecting appropriate work techniques.

It also includes preparing, using and maintaining specialised insulated tools and equipment.

This unit is subject to the following requirements for entry:

- *Certificate III in ESI - Distribution Overhead - powerline worker qualification or equivalent.*

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable, refer to unit application.

Competency Field

Distribution Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan to maintain energised HV distribution overhead electrical apparatus (glove and barrier)	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Loads/forces are calculated in accordance with workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Hazards are identified, risks assessed and control measures identified and applied
	1.7 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.8 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.9 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.10 Work permit/approval is organised in accordance with workplace requirements
	1.11 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.12 Worksite is prepared in accordance with the work plan and workplace requirements
	1.13 Traffic management plan is confirmed as being in place in accordance with workplace requirements

2 Carry out maintenance of energised HV distribution overhead electrical apparatus (glove and barrier)	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permit/approval is obtained to commence the work in accordance with workplace requirements
	2.5	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.6	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.7	Safe approach distances are maintained when the work is being performed
	2.8	Energised HV distribution overhead electrical apparatus is installed and maintained in accordance with the work plan and workplace requirements
	2.9	Work permit/approval is cancelled or relinquished in accordance with workplace requirements
	2.10	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.11	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace

requirements

3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRDP14 Maintain energised HV distribution overhead electrical apparatus (glove).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDO003 Maintain energised high voltage distribution overhead electrical apparatus (glove and barrier)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- installing/replacing all of the following:
  - structure
  - cross-arm
  - strain insulator
  - pin insulator
  - connecting bridge/bonding connections
- installing/maintaining at least four (4) of the following:
  - pole mounted reclosers
  - air brake switches
  - high voltage (HV) links/disconnects
  - temporary HV links/HV fuses
  - expulsion drop-out fuses
  - lightning arrestors
  - conductors
  - vibration dampers, line splices, armour rods or aircraft warning markers
- working from an approved elevated work platform (EWP)
- using at least one (1) of the following testing and recording devices:
  - amp meter

  - insulation test equipment
  - leakage detector
  - voltage detector
- dealing with an unplanned event on at least one (1) occasion
- organising, issuing, cancelling or relinquishing relevant work permits/approvals in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice, and organisational workplace requirements, including:
  - WHS/OHS
  - live work up to and including 33 kV HV glove and barrier principles, techniques and procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety precautions for HV live distribution glove and barrier work, including:
  - minimum approach distances/safe approach distances
  - effects of excessive conductor temperature on insulating equipment
  - types and application of PPE
  - integrity of insulation
  - emergency response, first aid and rescue
  - disabling auto-reclose function
  - network access and communication
- definition of terms for HV live work glove and barrier method
- mobile plant, including:
  - types
  - care and maintenance
  - frequency of testing
  - earthing
- insulated barriers, sticks, tools and equipment, including:
  - types, construction and characteristics
  - application
  - care and maintenance

    - frequency of testing
- gloves and sleeves, including:
    - types, construction and characteristics
    - application
    - care and maintenance
    - frequency of testing
- operational use of plant, sticks, tools and equipment, including:
    - conductor support
    - selecting conductor support method
    - calculation of loads
    - effects of secondary loadings/forces
    - effects of resultant forces
    - conductor support rigging procedures
- safety observer:
    - role and responsibilities
    - communication methods.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry to maintain energised HV distribution overhead electrical apparatus (glove and barrier)
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDO004 Maintain energised high voltage distribution overhead electrical apparatus (stick)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain energised high voltage (HV) distribution overhead electrical apparatus using stick method in the electricity supply industry (ESI).

It includes gaining network access approval, verifying site conditions and potential hazards, calculating physical loads and selecting appropriate work techniques.

It also includes preparing, using and maintaining specialised insulated tools and equipment.

This unit is subject to the following requirements for entry:

- *Certificate III in ESI - Distribution Overhead - powerline worker qualification or equivalent.*

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable, refer to unit application.

Competency Field

Distribution Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan to maintain energised HV distribution overhead electrical apparatus (stick)	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Loads/forces are calculated in accordance with workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Hazards are identified, risks assessed and control measures identified and applied
	1.7 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.8 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.9 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.10 Work permit/approval is organised in accordance with workplace requirements
	1.11 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.12 Worksite is prepared in accordance with the work plan and workplace requirements
	1.13 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out maintenance of energised HV distribution	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

overhead electrical apparatus (stick)		be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permit/approval is obtained to commence the work in accordance with workplace requirements
	2.5	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.6	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.7	Safe approach distances are maintained when the work is being performed
	2.8	Energised HV overhead electrical apparatus is installed and maintained in accordance with work plan and workplace requirements
	2.9	Work permit/approval is cancelled or relinquished in accordance with workplace requirements
	2.10	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.11	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of

in accordance with workplace requirements

3.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRDP13 Maintain energised HV distribution overhead electrical apparatus (stick).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDO004 Maintain energised high voltage distribution overhead electrical apparatus (stick)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- installing/replacing all of the following:
  - structure
  - cross-arm
  - strain insulator
  - pin insulator
  - connecting bridge/bonding connections
- installing/maintaining at least two (2) of the following:
  - pole mounted reclosers
  - air brake switches
  - high voltage (HV) links/disconnects
  - temporary HV links/HV fuses
  - expulsion drop-out fuses
  - lightning arrestors
  - vibration dampers, line splices, armour rods or aircraft warning markers
- working from at least two (2) of the following:
  - elevated work platform (EWP)
  - ladder
  - pole platform
  - structure
- using at least one (1) of the following testing and recording devices:

  - amp meter
  - insulation test equipment
  - leakage detector
  - voltage detector
- dealing with an unplanned event on at least one (1) occasion
- organising, issuing, cancelling or relinquishing relevant work permits/approvals in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - live work up to and including 66 kV HV stick principles, techniques and procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- safe use of plant, tools and equipment
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety precautions for HV live distribution stick work, including:
  - minimum approach distances/safe approach distances
  - effects of excessive conductor temperature on insulating equipment
  - types and application of PPE
  - integrity of insulation
  - emergency response, first aid and rescue
  - disabling auto-reclose function
  - network access and communication
- definition of terms for HV live work stick method
- mobile plant, including:
  - types
  - care and maintenance
  - frequency of testing
  - earthing
- insulated sticks, tools and equipment, including:
  - types, construction and characteristics
  - application
  - care and maintenance

  - frequency of testing
- operational use of plant, sticks, tools and equipment, including:
  - conductor support
  - selecting conductor support method
  - calculation of loads
  - effects of secondary loadings/forces
  - effects of resultant forces
  - conductor support rigging procedures
- safety observer:
  - role and responsibilities
  - communication methods.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry to maintain energised HV distribution overhead electrical apparatus (stick)
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDO005 Maintain overhead energised low voltage distribution network

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain overhead energised low voltage (LV) distribution network in the electricity supply industry (ESI).

It includes maintaining cables and conductors, replacing poles and hardware, using specialised equipment, undertaking electrical tests and completing documentation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

Competency Field

Distribution Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain overhead energised LV distribution network	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Resources, including plant, equipment, tools and PPE, required for the job are identified, scheduled and coordinated and confirmed safe and in technical working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.10 Worksite is prepared in accordance with the work plan and workplace requirements

	1.11	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out maintenance of overhead energised LV distribution network	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Overhead energised LV conductors and cables are maintained in accordance with workplace requirements
	2.8	Overhead LV structure is maintained in accordance with workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.10	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRDP12 Maintain overhead energised low voltage conductors and cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDO005 Maintain overhead energised low voltage distribution network

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- repairing and joining energised overhead low voltage (LV) conductors and cables
- connecting and terminating conductors and cables in accordance with workplace requirements
- completing at least four (4) of the following energised LV tasks:
  - replacing strain cross arm*
  - replacing intermediate cross arm
  - conversion from intermediate to strain, or strain to intermediate
  - replacing pole
  - replacing insulator
  - installing/replacing bridge/tap
  - replacing LV isolators/links/disconnector/s
  - (*must do)
- working on energised LV from at least two (2) of the following:
  - elevated work platform (EWP)
  - ladder
  - portable platform
- using at least four (4) of the following specialised energised LV equipment:
  - insulating mats/sleeves
  - temporary bridging device
  - insulating gloves

  - tensioning devices
  - pole shrouds
- performing at least two (2) of the following LV tests:
  - polarity and loop impedance
  - phasing
  - neutral identification
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safe work practices and procedures for working on or near energised LV
- insulating gloves, including:
  - types, construction and characteristics
  - application
  - care and maintenance
  - testing
- specialised tools and equipment, including:
  - types, construction and characteristics
  - application
  - care and maintenance
  - testing
- conductor support:
  - selecting conductor support method
  - calculation of loads
  - effects of secondary loadings/forces
- safety observer:
  - role and responsibilities
  - communication methods.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for maintaining overhead energised LV distribution networks
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDO006 Maintain, test and verify distribution overhead network

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit consolidates critical knowledge and skills developed throughout the term of the qualification to maintain, test and verify distribution overhead network installations in the electricity supply industry (ESI).

It includes maintaining energised low voltage (LV) distribution overhead network installations.

It also includes testing and verifying network circuits, electrical apparatus and customer connections for compliance with the work plan and workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDO001 Inspect overhead poles, structures and electrical apparatus

UETDRDO005 Maintain overhead energised low voltage distribution network

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS008 Install and maintain electrical apparatus

UETDRIS010 Install and maintain low voltage overhead services

UETDRIS012 Install and maintain poles, structures and hardware

Competency Field

Distribution Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain, test and verify overhead distribution network	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Safe approach distances for the work are determined and confirmed in accordance with the work plan and workplace requirements
	1.7 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.8 Communication method between the workers and safety observer is determined and confirmed in accordance

		with workplace requirements
	1.9	Work permits are received and signed in accordance with workplace requirements
	1.10	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.11	Equipment for testing and verification is determined, inspected, confirmed in working order and calibrated in accordance with workplace requirements
	1.12	Worksite is prepared in accordance with the work plan and workplace requirements
	1.13	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out maintenance of overhead distribution network	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer in position to observe the work in accordance with workplace requirements
	2.5	Safe approach distances are maintained when the work is being performed
	2.6	Communication method between workers and safety observer is used in accordance with workplace requirements
	2.7	Overhead energised LV structure is maintained in accordance with workplace requirements
	2.8	Overhead electrical apparatus is maintained in accordance with workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Test and verify overhead distribution network	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

		be performed are applied and monitored
	3.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	3.5	Safe approach distances are maintained when the work is being performed
	3.6	Communication method between workers and safety observer is used in accordance with workplace requirements
	3.7	Overhead distribution network installations are tested for compliance in accordance with workplace requirements
	3.8	Overhead distribution network installations are inspected for compliance in accordance with workplace requirements
	3.9	Inspection and test results are recorded in accordance with workplace requirements
	3.10	Incidents or unplanned events are responded to in accordance with workplace requirements
4 Complete work and documentation	**4.1**	Incidents or unplanned events are reported in accordance with workplace requirements, as required
	4.2	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.3	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.4	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.5	Work permits are signed off in accordance with workplace requirements
	4.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRDP99 Test and verify distribution overhead installations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDO006 Maintain, test and verify distribution overhead network

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant plant, tools, equipment and personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- selecting, inspecting and using specialised tools and equipment
- maintaining energised low voltage (LV) distribution overhead network installations including at least one (1) of the following:
  - strain cross arm replacement
  - intermediate cross arm replacement
  - conversion from intermediate to strain
- testing electrical apparatus, including:
  - insulation resistance
  - earth resistance
  - voltage
- testing network circuit including at least three (3) of the following:
  - phasing*
  - neutral identification
  - phase rotation
  - loop impedance
  - voltage
  - current
  - earthing systems
  - (*must do)

- testing consumer/customer connections including at least five (5) of the following:
  - neutral integrity*
  - polarity*
  - voltage
  - current
  - phase rotation
  - insulation resistance
  - neutral identification
  - loop impedance
  - earth resistance
  - (*must do)
- inspecting overhead distribution network installation for compliance
- recording test results in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - network circuit testing
  - electrical apparatus testing
  - customer/consumer connection testing
  - maintenance procedures for energised LV overhead distribution network
  - capture and record test results
  - work records, reports and documentation
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and specialised equipment
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for maintaining, testing and verifying distribution overhead network
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS015 Assess distributed energy resource connections to a distribution network

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to assess distributed energy resource (DER) connections to a distribution network in the electricity supply industry (ESI).

It includes knowledge of grid connected distributed energy resources including types, sustainability and potential impacts on existing networks.

It also includes procedures for validating DER connections, and documenting and reporting recommended solutions for identified generation, supply and load issues.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDS027 Investigate quality of supply issues

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to assess DER connections to a distribution network	**1.1** Project requirements are determined
	1.2 Assessment specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Assess DER connections to a distribution network	**2.1** Site inspection is performed
	2.2 DER connection is assessed in accordance with workplace requirements
	2.3 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Assessment is checked for compliance against legislation, regulations, standards and codes of practice
	2.5 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
	2.6 Quality checks of work are undertaken in accordance with workplace requirements

3 Complete work and documentation	**3.1** Completed work is checked against project and workplace requirements
	3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a newly created unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS015 Assess distributed energy resource connections to a distribution network

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- determining project requirements
- determining design specifications
- obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
- determining requirements for site inspections in accordance with workplace requirements
- prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one site inspection
- applying sustainable energy principles and practices
- checking connection assessment for compliance against legislation, regulations, standards and codes of practice
- identifying, and minimising or eliminating health and safety risks by using safety and control measures
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation
- using engineering applications software to assess impact of distributed energy resource (DER) on the network
- completing three (3) assessments of a DER connection using at least two (2) of the following project types:
  - solar
  - wind
  - hydro
  - hydrogen
  - wave
  - battery
- completing the following checks for each of the assessments:
  - voltage rise test
  - phase balance test

  - accredited DER equipment is used
  - network suitability
  - single line diagram
  - reverse power flow
- recommending solutions for each of the assessments on identified generation, supply and load issues.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- grid connected distributed energy resources, including:
  - types
  - sustainability
  - impacts on existing network
- procedures for validating DER connections to a distribution network
- procedures for documenting and reporting recommended solutions for identified generation, supply and load issues
- types and application of PPE for site inspection
- manuals, diagrams and drawings.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS016 Coordinate and perform line and easement surveys

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to coordinate and perform line and easement surveys in the electricity supply industry (ESI).

It includes types, functionality and maintenance of specialist tools, and fundamentals of buried services and other infrastructure.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDS028 Prepare and manage construction plans for electrical infrastructure

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan to coordinate and perform line and easement surveys	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Purpose of the line and easement survey is established and expected outcomes of the work are confirmed with appropriate personnel
	1.3 Work plan is obtained and confirmed in accordance with workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Hazards are identified, risks assessed, and control measures identified and applied
	1.7 Work permits are determined in accordance with workplace requirements
	1.8 Liaison and communication issues with authorised personnel, authorities and clients are resolved to perform work, as required
	1.9 Worksite is prepared in accordance with the work plan and workplace requirements
2 Coordinate and perform line and easement surveys	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Line and easement surveys are coordinated and performed in accordance with workplace requirements
	2.3 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.4 Quality checks of work are undertaken in accordance with work plan and workplace requirements

	2.5	Work roles and tasks are allocated according to individual competencies and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS013 Organise and implement ESI line and easement surveys.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS016 Coordinate and perform line and easement surveys

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- performing at least one (1) site inspection
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining work permits in accordance with workplace requirements
- determining requirements for site inspection
- completing relevant work records, reports and documentation
- completing one (1) survey of an overhead network for each the following:
  - multi-pole extensions
  - in-line pole relocations
  - multi-circuit overhead lines
  - upgrade/alteration to existing assets
- completing a control checklist for each of the surveys.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits

- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation maintenance
- site inspections
- types, functionality and maintenance of specialist tools, including:
  - laser scans
  - geotech studies
  - survey equipment
  - ground penetrating radar
- buried services and other infrastructure, including:
  - telecommunications
  - power
  - water
  - sewerage
  - gas.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, facilities, equipment PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS017 Design customer substations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to design customer substations in the electricity supply industry (ESI).

It includes design specifications, site requirements, systems modelling, sustainable energy principles, compliance requirements, and identification, minimisation or elimination of health and safety risks by using safety and control measures.

It also includes the applications of, and the relationship between primary and secondary systems within the substation environment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to design customer substations	**1.1** Project requirements are determined
	1.2 Design specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Design customer substations	**2.1** Site inspection is performed
	2.2 Customer substation is designed in accordance with workplace requirements
	2.3 Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Design is checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against project and workplace requirements

3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS001 Design customer power system substations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS017 Design customer substations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- determining project requirements
- determining design specifications
- obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
- determining requirements for site inspections in accordance with workplace requirements
- prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one (1) site inspection
- demonstrating use of systems modelling to evaluate and determine best outcomes
- applying sustainable energy principles and practices
- checking design for compliance against legislation, regulations, standards and codes of practice
- identifying, and minimising or eliminating health and safety risks by using safety and control measures
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation
- completing six (6) designs from at least two (2) of the following project types:
  - single transformer substation
  - multi-transformer substation
  - upgrade/alteration to existing asset
  - auto-changeover system
- drafting each of the following for each of six (6) substation designs:
  - single line diagram
  - above ground layout diagram
  - earthing layout diagram
  - primary plant dimensioning checklist
  - standards compliance checklist

- hazard identification, risk assessment and control measures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- customer substation design, including:
  - project requirements
  - design specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE
  - site inspections
  - application of sustainable energy principles and practices
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
  - manuals, diagrams and drawings
- types, functionality and maintenance of specialist tools, including:
  - laser scans
  - geotech studies
  - survey equipment
  - ground penetrating radar
- buried services and other infrastructure, including:
  - telecommunications
  - power
  - water
  - sewerage
  - gas
- relationship between primary and secondary systems
- types of substations or upgrades, including:
  - single transformer substations
  - multi-transformer substations
  - upgrade/alteration to existing assets
  - auto-changeover systems
- transformers, including:
  - types
  - characteristics
  - basic construction
  - operation under load/no-load conditions
  - types and operation of tap changing switches

  - efficiency and cooling
  - auxiliary equipment
  - maintenance
  - restrictions to parallel operation
  - harmonics issues and remedies
  - testing and fault-finding procedures
- fire and oil management, including:
  - bund design
  - flame traps
  - oil/water separation systems.
- high voltage (HV) switchgear, including:
  - protection and alarms
  - operating limitations
  - protection device rating
  - switching equipment and practices
  - paralleling requirements
  - isolation and earthing procedures
  - common distribution faults
- metering and control equipment including:
  - types of meters
  - installation and removal
  - associated equipment and accessories
  - testing procedures
- automation systems, including:
  - function
  - main components
  - operation procedure
- layout principles for a distribution substation including:
  - relationship to overall power system
  - purpose
  - location
  - equipment layout
- principles of computer-aided drafting.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry to design customer substations
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS018 Design distribution protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to design distribution protection systems in the electricity supply industry (ESI).

It includes calculations of fault levels, selection of appropriate protection devices and automation requirements, and protection coordination schemes.

It also includes recommendations to support the calculations, and compliance with workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace subject to regulations for undertaking of electrical work.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to design distribution protection systems	**1.1** Project requirements are determined
	1.2 Design specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Design distribution protection systems	**2.1** Site inspection is performed where required
	2.2 Distribution protection systems are designed in accordance with workplace requirements
	2.3 Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Design is checked for compliance against legislation, regulations, standards and codes of practice
	2.5 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
	2.6 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against project and workplace requirements
	3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS006 Develop high voltage and low voltage distribution protection systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS018 Design distribution protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- designing of distribution protection systems, including:
  - specifications
  - requirements for site inspection
  - systems modelling to evaluate and determine best outcomes
  - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
  - identifying, minimising or eliminating health and safety risks by using safety and control measures
  - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
  - prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one (1) site inspection
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation
- completing at least two (2) protection system designs from two (2) of the following project types:
  - overhead designs
  - underground designs
  - substation designs
- completing all of the following for each design:
  - design control checklist
  - rectifying errors
  - calculations of fault levels
  - selection of appropriate protection devices
  - automation requirements

- protection coordination schemes.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- distribution protection systems development, including:
  - project requirements
  - development specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE
  - site inspections
  - prioritisation and sequencing of work for completion
  - use of systems modelling for best outcomes
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
  - manuals, diagrams and drawings
- types of distribution equipment
- installation and maintenance procedures for distribution equipment
- electrical equipment associated with distribution field device protection and control schemes
- calculation of fault levels
- interrupting device capabilities
- types, operation, and setting of protection systems.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for high voltage (HV) and low voltage (LV) distribution protection systems

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS019 Design distribution substations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to design distribution substations in the electricity supply industry (ESI).

It includes design specifications, site requirements, systems modelling, sustainable energy principles, and compliance requirements.

It also includes identification, minimisation or elimination of health and safety risks by using safety and control measures.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to design distribution substations	**1.1** Project requirements are determined
	1.2 Design specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Design distribution substations	**2.1** Site inspection is performed
	2.2 Distribution substations are designed in accordance with workplace requirements
	2.3 Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Design is checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against project and workplace requirements

3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS003 Design power system distribution substations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS019 Design distribution substations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- determining project requirements
- determining design specifications
- obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
- determining requirements for site inspections in accordance with workplace requirements
- prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one (1) site inspection
- demonstrating use of systems modelling to evaluate and determine best outcomes
- applying sustainable energy principles and practices
- checking design for compliance against legislation, regulations, standards and codes of practice
- identifying, and minimising or eliminating health and safety risks by using safety and control measures
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing six (6) designs from at least two (2) of the following project types:
  - single transformer substations
  - multi-transformer substation
  - upgrade/alteration to existing assets
- drafting all of the following for each design:
  - single line diagram
  - above ground layout diagram
  - earthing layout diagram
  - primary plant dimensioning checklist
  - standards compliance checklist
  - hazard identification, risk assessment and control measures.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- distribution substation design, including:
  - project requirements
  - design specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE
  - site inspections
  - use of systems modelling for best outcomes
  - application of sustainable energy principles and practices
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
  - manuals, diagrams and drawings
- the purpose and features of typical co-generation systems and associated network constraints
- substations and power transformers including:
  - characteristics
  - testing and commissioning
  - maintenance
  - metering and control equipment
  - switchgear
  - earthing
  - surge protection
  - auxiliary equipment
- transformers, including:
  - types
  - characteristics
  - basic construction
  - operation under load/no-load conditions
  - types and operation of tap changing switches
  - efficiency and cooling
  - auxiliary equipment
  - maintenance
  - restrictions to parallel operation
  - harmonics issues and remedies
  - testing and fault-finding procedures
- high voltage (HV) switchgear, including:
  - protection and alarms

  - operating limitations
  - protection device rating
  - switching equipment and practices
  - paralleling requirements
  - isolation and earthing procedures
  - common distribution faults
- automation systems, including:
  - function
  - main components
  - operation procedure
- layout principles for a distribution substation including:
  - relationship to overall power system
  - purpose
  - location
  - equipment layout
- fire and oil management, including
  - bund design
  - flame traps
  - oil/water separation systems.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS020 Design overhead distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to design overhead distribution systems in the electricity supply industry (ESI).

It includes distribution layout principles and infrastructure, including construction types, structures and clearances.

It also includes material lists, conductor specifications, and types and characteristics of overhead assets and associated equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to design overhead distribution systems	**1.1** Project requirements are determined
	1.2 Design specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Design overhead distribution systems	**2.1** Site inspection is performed
	2.2 Overhead distribution systems are designed in accordance with workplace requirements
	2.3 Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Environmental sustainability principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Design is checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against project and workplace requirements

3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS002 Design overhead distribution power systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS020 Design overhead distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- designing of overhead distribution systems, including:
  - specifications
  - requirements for site inspection
  - systems modelling to evaluate and determine best outcomes
  - sustainable energy principles and practices
  - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
  - identifying minimising or eliminating health and safety risks by using safety and control measures
  - environmental sustainability principles
  - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
  - prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one (1) site inspection
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation
- completing six (6) overhead distribution or sub-transmission system designs for at least three (3) of the following:
  - residential subdivision developments
  - industrial/commercial subdivision developments
  - upgrade/alteration to existing assets
  - multi-pole extensions
  - in-line pole relocations
  - multi-circuit overhead lines
- completing all of the following for each design:

- a design control checklist
- rectifying errors.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- overhead distribution systems design, including:
  - project requirements
  - design specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE
  - site inspections
  - prioritisation and sequencing of work for completion
  - use of systems modelling to evaluate and determine best outcomes
  - application of environmental sustainability principles and practices
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
- distribution infrastructure, including:
  - manuals and diagrams
  - residential subdivision developments
  - industrial/commercial subdivision developments
  - upgrade/alteration to existing assets
  - multi-pole extensions
  - in-line pole relocations
  - multi-circuit overhead lines
  - construction types, structures and clearances
  - material lists, conductor size, type and route length
- control procedures and documents, including:
  - design control checklists
  - common design errors
  - rectification of errors
- layout principles for overhead distribution, including determination of:
  - conductor size, type and route length
  - materials, equipment and tools
  - component types, quantities and costing
  - component and equipment spacing
- resources required for stringing and maintenance of conductors
- types and characteristics of poles and associated equipment

- buried services and other infrastructure, including:
  - telecommunications
  - power
  - water
  - sewerage
  - gas
- calculation of voltage drop in relation to length of cable run
- methods of joining and terminating conductors
- techniques in the installation of conductors
- techniques in location of conductor faults
- techniques in conductor drawing
- principles of computer-aided drafting.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS021 Design public lighting systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to design public lighting systems in the electricity supply industry (ESI).

It includes basic public lighting principles, including layout, principles of colour, behaviour of light, and factors that affect illumination.

It also includes factors affecting external lighting design, calculation of light output and illuminance, and special lighting situations.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to design public lighting systems	**1.1** Project requirements are determined
	1.2 Design specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Design public lighting systems	**2.1** Site inspection is performed
	2.2 Public lighting system is designed in accordance with workplace requirements
	2.3 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Environmental sustainability principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Design is checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against project and workplace requirements

3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS004 Design power system public lighting systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS021 Design public lighting systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- designing of public lighting systems, including:
  - specifications
  - requirements for site inspection
  - sustainable energy principles and practices
  - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
  - identifying, minimising or eliminating health and safety risks by using safety and control measures
  - environmental sustainability principles
  - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
  - prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one (1) site inspection
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation
- completing six (6) designs of a public lighting system using at least three (3) of the following project types:
  - single light on existing assets
  - main road/minor road schemes
  - intersections
  - traffic management requirements
  - alteration to existing assets
  - multi-circuit systems
- completing all of the following for each design:
  - design control checklist

- rectifying errors.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- public lighting systems design, including:
  - project requirements
  - design specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE
  - site inspections
  - prioritisation and sequencing of work for completion
  - application of environmental sustainability principles and practices
  - application of sustainable energy principles and practices
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
  - manuals, diagrams and drawings
- public lighting principles, including:
  - light design layout
  - electromagnetic spectrum
  - principles of colour
  - behaviour of light
  - factors that affect illumination
  - tools, equipment, and techniques used for installation, maintenance, and testing
  - types and function of lanterns/luminaires/lamps, control equipment, poles and associated hardware used for street lighting
- types of tariffs and charges
- types of street lighting components and circuits
- factors affecting external lighting design
- calculation of light output and illuminance
- rated life of luminaries
- special lighting situations, including security lighting, hazardous street locations and emergency lighting
- principles of surveying
- principles of computer-aided drafting.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS022 Design underground distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to design underground distribution systems in the electricity supply industry (ESI).

It includes distribution layout principles and infrastructure, including underground asset types, materials, and equipment and tools.

It also includes material lists, cable specifications, buried services, and other infrastructure.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to design underground distribution systems	**1.1** Project requirements are determined
	1.2 Design specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Design underground distribution systems	**2.1** Site inspection is performed
	2.2 Underground distribution system is designed in accordance with workplace requirements
	2.3 Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Design is checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against customer and workplace requirements

3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS005 Design underground distribution power systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS022 Design underground distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- designing underground distribution systems, including:
  - specifications
  - requirements for site inspection
  - systems modelling to evaluate and determine best outcomes
  - sustainable energy principles and practices
  - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
  - identifying, minimising or eliminating health and safety risks by using safety and control measures
  - environmental sustainability principles
  - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
  - prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one (1) site inspection
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation
- completing six (6) underground distribution or sub-transmission system designs for at least three (3) of the following:
  - residential subdivision developments
  - industrial/commercial subdivision developments
  - upgrade/alteration to existing assets
  - underground supplies to customers
- completing for each of the designs:
  - a design control checklist
  - rectifying errors.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- underground distribution systems design, including:
  - project requirements
  - design specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE
  - site inspections
  - prioritisation and sequencing of work for completion
  - use of systems modelling to evaluate and determine best outcomes
  - application of sustainable energy principles and practices
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
- distribution infrastructure, including:
  - manuals, diagrams and drawings
  - residential subdivision developments
  - industrial/commercial subdivision developments
  - upgrade/alteration to existing assets
  - underground supplies to customers
  - material lists, cable size, type and route length
- control procedures and documents, including:
  - design control checklists
  - common design errors
  - rectification of errors
- layout principles for underground distribution, including determination of:
  - cable size, type and route length
  - materials, equipment and tools
  - component types, quantities and costing
  - component and equipment spacing
- installation considerations for underground cable including:
  - workplace requirements
  - excavation and trench safety regulations
  - gas detection procedures
  - working in confined spaces
  - PPE requirements
  - liquified gas equipment hazards
  - testing procedures for liquified gas equipment

- buried services and other infrastructure, including:
  - telecommunications
  - power
  - water
  - sewerage
  - gas
- trench excavation and reinstatement procedures
- calculation of voltage drop in relation to length of cable run
- techniques for reducing electrical stress on cables
- cable derating factors
- methods for joining and terminating cables
- techniques for the installation of cables above and below ground
- techniques for cable testing and the location of cable faults
- techniques for cable drawing.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS023 Draft and layout distribution substation minor upgrade

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to draft and layout minor upgrades in a distribution substation, in the electricity supply industry (ESI).

It includes different types of substations, construction types, structures and clearances, and the use of manuals and diagrams.

It also includes the fundamentals of surveying, trenching, computer-aided drafting, and materials, equipment and tools inventory.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to draft and layout distribution substation minor upgrade	**1.1** Project requirements are determined
	1.2 Draft and layout specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Draft and layout distribution substation minor upgrade	**2.1** Site inspection is performed
	2.2 Substation minor upgrade is drafted and laid out in accordance with workplace requirements
	2.3 Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Draft and layout are checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the draft and layout process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and	**3.1** Completed work is checked against project and

documentation	workplace requirements
3.2	Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS008 Draft and layout a power system distribution substation minor upgrade.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS023 Draft and layout distribution substation minor upgrade

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- drafting and laying out of distribution substation minor upgrade, including:
  - specifications
  - requirements for site inspection
  - systems modelling to evaluate and determine best outcomes
  - sustainable energy principles and practices
  - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
  - identifying, minimising or eliminating health and safety risks by using safety and control measures
  - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
  - prioritising and sequencing work for completion in accordance with workplace requirements
- drafting at least one (1) of the following:
  - a multi-phase pole mounted distribution transformer upgrade layout
  - a single-phase pole mounted transformer upgrade
- drafting the layout of at least one (1) of the following:
  - a multi-phase underground distribution substation upgrade
  - a multi-phase distribution substation or associated equipment upgrade
- completing all of the following for each of the completed drafts
  - single line diagram
  - above ground layout diagram
  - below ground layout diagram
  - earthing layout diagram
  - primary plant dimensioning checklist
  - standards compliance checklist
- performing at least one (1) site inspection

- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- distribution substation minor upgrade, draft and layout, including:
  - project requirements
  - design specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE
  - site inspections
  - use of systems modelling for best outcomes
  - application of sustainable energy principles and practices
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
- distribution substations, including:
  - pole mounted transformers
  - pad mounted transformers
  - overhead conductors, route length and connections
  - underground cables, joints and terminations
  - high voltage (HV)/low voltage (LV) switchgear
- substation construction types, structures and clearances
- manuals, diagrams and drawings, including:
  - distribution extensions
  - distribution substations
  - street lighting systems
  - switching symbols and operations
  - mechanical drawings
- principles of surveying, including:
  - buried services detection
  - techniques for measuring heights and distances
  - pegging
- principles of cabling and trenching
- principles of computer-aided drafting.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate PPE currently used in industry to undertake drafting and laying out a distribution substation upgrade
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS024 Draft and layout overhead distribution extension

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to draft and layout overhead distribution extensions in the electricity supply industry (ESI).

It includes principles and installation procedures of overhead distribution conductors, poles, structures, and associated hardware.

It also includes use of manuals, system diagrams, plans and drawings, fundamentals of surveying, and computer-aided drafting.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to draft and layout overhead distribution extension	**1.1** Project requirements are determined
	1.2 Draft and layout specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Draft and layout overhead distribution extension	**2.1** Site inspection is performed
	2.2 Overhead distribution extension is drafted and laid out in accordance with workplace requirements
	2.3 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Environmental sustainability principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Draft and layout are checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the draft and layout process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against project and workplace requirements

3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS009 Draft and layout a power system overhead distribution extension.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS024 Draft and layout overhead distribution extension

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- drafting and laying out an overhead distribution extension, including:
  - specifications
  - requirements for site inspection
  - sustainable energy principles and practices
  - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
  - identifying, minimising or eliminating health and safety risks by using safety and control measures
  - applying environmental sustainability principles
  - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
  - prioritising and sequencing work for completion in accordance with workplace requirements
- drafting and laying out at least two (2) of the following:
  - low voltage (LV) single phase distribution extension
  - LV multi-phase distribution extension
  - high voltage (HV) single phase distribution extension
  - HV multi-phase distribution extension
- performing at least one (1) site inspection
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- maintaining work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- overhead distribution extension, draft and layout, including:
  - project requirements
  - design specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE
  - site inspections
  - prioritisation and sequencing of work for completion
  - application of environmental sustainability principles and practices
  - application of sustainable energy principles and practices
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
  - manuals, diagrams and drawings
- principles of surveying
- principles of computer-aided drafting
- principles and installation procedures of overhead distribution conductors
- principles and installation procedures of poles and structures, and associated hardware.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry to draft and layout an overhead distribution extension
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS025 Draft and layout street lighting system

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to draft and layout a street lighting system in the electricity supply industry (ESI).

It includes factors affecting external lighting design, calculation of light output and illuminance, and special lighting situations.

It also includes use of manuals and diagrams, and the fundamentals of surveying and computer-aided drafting.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to draft and layout street lighting system	**1.1** Project requirements are determined
	1.2 Draft and layout specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Draft and layout street lighting system	**2.1** Site inspection is performed
	2.2 Street lighting system is drafted and laid out in accordance with workplace requirements
	2.3 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Environmental sustainability principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Draft and layout are checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the design process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against customer and workplace requirements

3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS010 Draft and layout a power system street lighting system.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS025 Draft and layout street lighting system

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- drafting and laying out two (2) street lighting systems, including:
  - specifications
  - requirements for site inspection
  - sustainable energy principles and practices
  - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
  - identifying, minimising or eliminating health and safety risks by using safety and control measures
  - applying environmental sustainability principles
  - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
  - prioritising and sequencing work for completion in accordance with workplace requirements
- performing at least one (1) site inspection
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- street lighting system, draft and layout, including:
  - project requirements
  - design specifications
  - hazard, risk assessment and risk control requirements, including potential hazards
  - types and application of PPE

  - site inspections
  - prioritisation and sequencing of work for completion
  - application of environmental sustainability principles and practices
  - application of sustainable energy principles and practices
  - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
  - work records, reports and documentation
  - manuals, diagrams and drawings
- public lighting principles, including:
  - light design layout
  - electromagnetic spectrum
  - principles of colour
  - behaviour of light
  - factors that affect illumination
  - tools, equipment, and techniques used for installation, maintenance, and testing
  - types and function of lanterns/luminaires/lamps, control equipment, poles and associated hardware used for street lighting
- types of street lighting components and circuits
- factors affecting external lighting design
- calculation of light output and illuminance
- rated life of luminaries
- special lighting situations, including security lighting, hazardous street locations and emergency lighting
- principles of surveying
- principles of computer-aided drafting.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry to undertake drafting and layout of a street lighting system.

- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS026 Draft and layout underground distribution extension

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to draft and layout underground distribution extensions in the electricity supply industry (ESI).

It includes principles and installation procedures of underground cables and associated infrastructure.

It also includes use of manuals, system diagrams, plans and drawings, fundamentals of surveying and computer-aided drafting.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to draft and layout underground distribution extension	**1.1** Project requirements are determined
	1.2 Draft and layout specifications are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Requirements for site inspections are determined in accordance with workplace requirements
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Draft and layout underground distribution extension	**2.1** Site inspection is performed
	2.2 Underground distribution extension is drafted and laid out in accordance with workplace requirements
	2.3 Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.4 Environmental sustainability principles are used to evaluate and determine best outcomes in accordance with workplace requirements
	2.5 Draft and layout are checked for compliance against legislation, regulations, standards and codes of practice
	2.6 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the draft and layout process
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and	**3.1** Completed work is checked against project and

documentation	workplace requirements
3.2	Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS011 Draft and layout a power system underground distribution extension.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS026 Draft and layout underground distribution extension

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- drafting and laying out an overhead distribution extension, including:
  - specifications
  - requirements for site inspection
  - applying sustainable energy principles and practices
  - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
  - identifying, minimising or eliminating health and safety risks by using safety and control measures
  - applying environmental sustainability principles
  - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
  - prioritising and sequencing work for completion in accordance with workplace requirements
- drafting and laying out all of the following on at least two (2) occasions:
  - low voltage (LV) multi-phase distribution extension
  - high voltage (HV) multi-phase distribution extension
- performing at least one (1) site inspection
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- underground distribution extension, draft and layout, including:
  - project requirements
  - design specifications

- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- site inspections
- prioritisation and sequencing of work for completion
- application of environmental sustainability principles and practices
- application of sustainable energy principles and practices
- compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
- work records, reports and documentation
- manuals, diagrams and drawings

- principles of surveying
- principles of computer-aided drafting
- principles and installation procedures of underground cables and associated infrastructure.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS027 Investigate quality of supply issues

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to investigate quality of supply issues in the electricity supply industry (ESI).

It includes common power quality issues, including electromagnetic interference, voltage irregularities, unbalanced loads, harmonics, and power factor.

It also includes testing and field equipment, including types, construction and function, calibration, care and maintenance, and measurement of power quality parameters.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to investigate quality of supply issues	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Purpose of the investigation is established and expected outcomes of the work are confirmed with appropriate personnel
	1.3 Requirements for site inspections are determined in accordance with workplace requirements
	1.4 Work plan is determined in accordance with workplace requirements, and where relevant, communicated to the appropriate personnel
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Hazards are identified, risks assessed, and control measures identified and applied
	1.8 Work permits are identified in accordance with workplace requirements
	1.9 Liaison and communication issues with authorised personnel, authorities and clients are resolved to perform work, as required
	1.10 Worksite is prepared in accordance with the work plan and workplace requirements
2 Investigate quality of supply issues	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Quality of supply issues are investigated in accordance with workplace requirements
	2.3 Incidents or unplanned events are responded to in

		accordance with workplace requirements
	2.4	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS012 Investigate quality of power systems supply issues.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS027 Investigate quality of supply issues

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- inspecting and using personal protective equipment (PPE) for site inspection
- dealing with an unplanned event on at least one (1) occasion
- performing at least one (1) site inspection
- obtaining work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- investigating two (2) quality of supply issues for at least three (3) of the following events:
  - electromagnetic interference
  - voltage irregularities
  - unbalanced loads
  - harmonics
  - power factor.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- safe use of plant, tools and equipment
- inspection and use of PPE for site inspection
- application, purpose and types of permits

- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- power quality issues, including:
  - electromagnetic interference
  - voltage irregularities
  - unbalanced loads
  - harmonics
  - power factor
- testing and field equipment, including:
  - types, construction and function
  - calibration
  - care and maintenance
- measurement of power quality parameters
- typical solutions to quality of supply issues.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry to investigate quality of supply issues
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDS028 Prepare and manage construction plans for electrical infrastructure

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to prepare and manage detailed construction plans for electrical infrastructure in the electricity supply industry (ESI).

It includes purpose and requirements of the construction plan, compliance, project and workplace requirements, and health and safety risks.

It also includes construction diagrams and drawings, the fundamentals of computer-aided drafting.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan to prepare and manage construction plans for electrical infrastructure	**1.1** Purpose and requirements of the construction plan are established
	1.2 Requirements for site inspections are determined in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
	1.4 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Prepare and manage construction plans for electrical infrastructure	**2.1** Site inspection is performed
	2.2 Construction plans are prepared and managed in accordance with workplace requirements
	2.3 Construction plan is checked for compliance against legislation, regulations, standards and codes of practice
	2.4 Health and safety risks are identified and minimised or eliminated by using safety and control measures in the planning process
	2.5 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked against project and workplace requirements
	3.2 Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDS014 Prepare and manage detailed construction plans for electrical power system infrastructure.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDS028 Prepare and manage construction plans for electrical infrastructure

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- determining purpose and requirements of the construction plan
- obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
- determining requirements for site inspections in accordance with workplace requirements
- prioritising and sequencing work for completion in accordance with workplace requirements
- checking construction plan for compliance against legislation, regulations, standards and codes of practice
- identifying, and minimising or eliminating health and safety risks by using safety and control measures
- performing ongoing quality checks of work in accordance with workplace requirements
- checking final construction plan against project and workplace requirements
- maintaining work records, reports and documentation
- preparing six (6) construction plans that relate to at least three (3) of the following design types:
  - overhead line
  - underground cable
  - distribution substation
  - transmission substation
  - sub-transmission substation
  - public lighting
  - zone substation
  - customer substation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- preparation of construction plans, including:
  - purpose and requirements of the construction plan
  - types and application of PPE
  - hazard, risk assessment and risk control requirements, including potential hazard
  - site inspections
  - compliance against legislation, regulations, standards and codes of practice, and project and workplace requirements
  - work records, reports and documentation maintenance
- construction diagrams and drawings
- transmission and sub-transmission system layout
- distribution system layout.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for detailed construction plans for electrical system infrastructure
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU001 Conduct high voltage testing of underground power cable system

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to conduct high voltage (HV) testing of an electricity supply industry (ESI) underground power system.

It includes testing using direct current (d.c.) or alternating current (a.c.) voltage methods to identify cable system defects.

It also includes interpreting the test results to determine the integrity of the cable system.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to conduct HV testing of underground power cable system	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work instruction is obtained and confirmed in accordance with workplace requirements
	1.3 Work is prioritised and sequenced for completion in accordance with work instruction and workplace requirements
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work permits are organised in accordance with workplace requirements
	1.6 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.7 Testing method is determined and appropriate test equipment is obtained and confirmed in working order in accordance with the work instruction and workplace requirements
	1.8 Worksite is prepared in accordance with the work instruction and workplace requirements
	1.9 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out the testing of a HV underground power cable system	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working in confined spaces and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements

	2.4	Test equipment is positioned, set up for testing and confirmed to be operating correctly
	2.5	Cable is confirmed de-energised in accordance with workplace requirements
	2.6	Work permits are received and signed in accordance with workplace requirements
	2.7	Cable is prepared for testing and test equipment connected to the cable in accordance with workplace requirements
	2.8	Cable system is tested to determine the integrity of the system in accordance with workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work instruction and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Work permits are signed off in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector

Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS59 Conduct high potential testing of power system underground power cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU001 Conduct high voltage testing of underground power cable system

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - handling underground power cables
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- using at least one (1) of the following cable testing methods:
  - insulation resistance (IR)
  - very low frequency (VLF) alternating current (a.c.) withstand or monitored withstand
  - direct current (d.c.) withstand
- completing at least three (3) of the following cable tests:
  - sheath integrity
  - core insulation resistance
  - tan delta
  - partial discharge
  - high voltage (HV) withstand (VLF a.c.)
  - HV withstand (d.c.)
- analysing the testing result to determine the integrity of the cable system
- using testing equipment in accordance with workplace requirements
- recording test results in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - working in confined spaces
  - trench safety
  - manual handling
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- work instruction requirements, including:
  - types of and layout of drawings
  - cable routes
  - manufacturer's instructions
  - testing standards
  - workplace documentation procedures
- HV paper insulated and polymeric cables, including:
  - types and sizes
  - construction, characteristics and properties
  - minimum bending radius
- HV testing requirements, including:
  - cable handling techniques
- types of and causes of cable defects, including:
  - poor jointing techniques (joints and terminations)
  - cracking or rupturing of cross-linked polyethylene (XLPE) or paper cable insulation
  - insulation porosity or other material defects
  - impurity inclusion or other contaminants in the main insulation
  - internal voids either in main insulation or in joints and terminations
  - water treeing
  - electrical trees
  - protrusions in the semi-conductive layers
  - insulation surface scratches or scoring
  - overheating by excess current

  - insulation damage due to voltage transients
  - mechanical damage to the outer sheath
- HV testing methods
- advantages and disadvantages of different HV testing methods
- HV failure of insulation
- use of HV testing equipment
- HV testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used for conducting HV testing of underground power cable system
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and manufacturer's instructions.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU002 Inspect underground electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package.

Application

This unit involves the skills and knowledge required to inspect underground electrical apparatus in the electricity supply industry (ESI).

It includes visually inspecting and identifying defective, damaged or faulty electrical apparatus and reporting inspection outcomes.

It also includes determing the cause of defective, damaged or faulty electrical apparatus.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

and

UETDREL005 Work safely in the vicinity of live electrical apparatus

or

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to inspect underground electrical apparatus	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Liaison and communication with stakeholders is carried out in accordance with workplace requirements
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
	1.8 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out inspection of underground electrical apparatus	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 The use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Underground electrical apparatus is visually inspected in accordance with work plan and workplace requirements
	2.5 Underground electrical apparatus defect or damage is identified in accordance with workplace requirements
	2.6 Underground electrical apparatus defect or damage cause is determined
	2.7 Incidents or unplanned events are responded to in

		accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.4	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit. No Equivalent Unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU002 Inspect underground electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- inspecting underground electrical apparatus, including:
  - transformers
  - switchgear
  - pole mounted cable and cable terminations
  - pillars
  - switchboards
  - earthing systems
- identifying underground electrical apparatus defects and damage
- determining the cause of underground electrical apparatus defects and damage
- using software applications or workplace documents for:
  - accessing and verifying existing data
  - capturing or recording data
  - categorising and recording defects
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice, and organisational workplace requirements, including:

    - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- construction manuals, system diagrams/plans and drawings
- procedures for workplace records, reports and documentation
- types, function and operation of underground electrical apparatus, including:
    - transformers
    - switchgear
    - pole mounted cable and cable terminations
    - pillars
    - switchboards
    - earthing systems
- installation requirements for underground electrical apparatus, including:
    - construction
    - connection
    - earthing
- types and causes of underground electrical apparatus defects and damage.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for inspecting underground electrical apparatus.
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU007 Install and maintain underground public lighting

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain underground public lighting in the electricity supply industry (ESI).

It includes installing poles/columns, hardware, underground cable and control equipment.

It also includes testing and commissioning, inspecting and maintaining public lighting.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain underground public lighting	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
	1.9 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.10 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.11 Traffic management plan is confirmed as being in place in accordance with workplace requirements

2 Carry out installation of underground public lighting	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights, the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Excavation/foundation is inspected for compliance with the work plan and workplace requirements
	2.7	Pole/column, hardware and control equipment is assembled in accordance with the work plan and workplace requirements
	2.8	Pole/column is erected and stabilised in accordance with the work plan and workplace requirements
	2.9	Earthing is installed in accordance with the work plan and workplace requirements
	2.10	Cable is laid and connected at the pole/column connection point and at the pillar
	2.11	Public lighting is tested and commissioned in accordance with the work plan and workplace requirements
	2.12	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.13	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out maintenance of underground public lighting	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Lifting, working at heights, and the use of plant, tools, equipment and PPE are carried out in accordance with

		workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	3.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	3.6	Public lighting is inspected in accordance with workplace requirements
	3.7	Public lighting is maintained in accordance with the work plan and workplace requirements
	3.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	3.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.5	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.6	Work permits are signed off in accordance with workplace requirements
	4.7	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit. No equivalent unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU007 Install and maintain underground public lighting

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- installing public lighting, including:
  - poles/columns
  - cable
  - lanterns/luminaires
  - outreach arms
  - fuses
  - control equipment
- replacing public lighting poles/columns
- maintaining public lighting hardware, including replacing any three (3) of the following:
  - luminaires
  - lamps
  - fuses
  - cable
  - control equipment
- identifying/diagnosing public lighting faults
- rectifying public lighting faults
- conducting at least three (3) of the following tests:

  - polarity*
  - voltage
  - continuity
  - insulation resistance
  - neutral identification
  - loop impedance
  - earth resistance
  - (*must do)
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - installation and maintenance of public lighting
  - inspection, testing and commissioning of public lighting
  - live low voltage (LV) connection principles
- hazard, risk assessment and risk control requirements including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- construction manuals, system diagrams/plans and drawings for public lighting
- basic lighting principles
- types and function of poles/columns and outreach arms
- types, function and operation of luminaires/lamps
- types, function and operation of control equipment
- controlling and switching of public lighting
- maintenance of public lighting, including:
  - types of faults and causes
  - repairing and replacing poles/columns, hardware and control equipment

- cleaning hardware.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining underground public lighting.
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU009 Install, test and verify distribution underground cable installations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit consolidates critical knowledge and skills developed throughout the term of the qualification to install, test and verify distribution underground cable installations in the electricity supply industry (ESI).

It includes the jointing, terminating and testing of underground cable and electrical equipment and the connection and testing of a customer connection.

It also includes verifying the cable installation complies with the work plan and workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

CPCCLDG3001 Licence to perform dogging

TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDU002 Inspect underground electrical apparatus

UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS008 Install and maintain electrical apparatus

UETDRIS011 Install and maintain low voltage underground services

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install, test and verify underground cable installations	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements

	1.8	Worksite is prepared in accordance with the work plan and workplace requirements
2 Carry out installation, testing and verifying of underground cable installations	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Manual handling, working in confined spaces, and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Cable is prepared and tested in accordance with the work plan and workplace requirements
	2.5	Cable jointing, terminating and testing is carried out in accordance with the work plan and workplace requirements
	2.6	Electrical equipment is tested in accordance with the work plan and workplace requirements
	2.7	Low voltage (LV) service installation is connected and tested in accordance with the work plan and workplace requirements
	2.8	Cable installation is verified in accordance with the work plan and workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.4	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.5	Work permits are signed off in accordance with

workplace requirements

3.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ99 Test and verify distribution cable jointing installations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU009 Install, test and verify distribution underground cable installations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- interpreting and using drawings, diagrams and instructions
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- completing at least one (1) of the following low voltage (LV) joints:
  - tee-off
  - straight
  - breech
- completing at least one (1) of the following high voltage (HV) joints:
  - tee-off
  - straight
  - breech
- completing at least one (1) of the following LV terminations:
  - pole top
  - transformer
  - LV switchboard
  - pillar/turret
  - lighting column
- completing at least one (1) of the following HV terminations:
  - pole top
  - transformer
  - switchgear
- completing at least two (2) of the following cable tests:
  - voltage
  - continuity

  - insulation resistance
  - phase identification
- installing electrical equipment, including:
  - testing electrical equipment
  - testing earthing systems
- connecting a LV service cable
- testing consumer/customer connections, including at least five (5) of the following:
  - neutral integrity*
  - polarity*
  - voltage
  - current
  - phase rotation
  - insulation resistance
  - neutral identification
  - loop impedance
  - earth resistance
  - (*must do)
- verifying cable installations, including:
  - complying with the work plan
  - identifying and rectifying non-compliance issues
- using testing equipment in accordance with workplace requirements
- recording test results in accordance with workplace requirements
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - WHS/OHS
  - live LV connection principles
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- construction manuals, system diagrams/plans and drawings
- HV and LV cable installation, including:

  - cable jointing and terminating procedures
  - testing procedures
- electrical equipment installation, including:
  - construction and connection procedures
  - testing procedures
- LV service installation, including:
  - connection procedures
  - testing procedures
- cable installation verification procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing, testing and verifying underground cable installations
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU010 Joint, terminate and maintain energised low voltage underground paper insulated cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to joint, terminate and maintain energised low voltage (LV) underground paper insulated cable in the electricity supply industry (ESI).

It includes jointing, terminating, repairing and the testing of cable in existing installations.

It also includes using a range of tools, specialised equipment, materials and manufacturer instructions.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDU014 Joint, terminate and maintain low voltage underground paper insulated cable

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to joint, terminate and maintain energised LV underground paper insulated cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Work site is prepared in accordance with the work plan and workplace requirements
2 Carry out jointing, terminating and maintenance of energised LV underground paper insulated cable	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Manual handling, working in confined spaces and use of tools, equipment and PPE are carried out in accordance with workplace requirements

	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Specialised equipment is used in accordance with workplace requirements
	2.5	Cable is prepared for jointing, terminating and maintenance in accordance with manufacturer instructions and workplace requirements
	2.6	Cable is tested before jointing or terminating in accordance with the work plan and workplace requirements
	2.7	Cable is jointed, terminated and maintained in accordance with manufacturer instructions and workplace requirements
	2.8	Cable is tested after jointing or terminating in accordance with the work plan and workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.10	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements
	3.7	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ24 Joint and maintain energised low voltage underground paper insulated cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU010 Joint, terminate and maintain energised low voltage underground paper insulated cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - protecting existing underground services
  - handling underground power cables
  - using liquefied petroleum gas (LPG)
  - applying shoring requirements
  - applying low voltage (LV) energised work principles
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- completing at least one (1) of the following cable joints:
  - tee-off
  - straight
  - breech
- completing at least one (1) of the following cable terminations:
  - LV switchboard
  - pillar/turret
  - lighting column
- using at least two (2) of the following cable jointing/terminating products:
  - resin
  - heat shrink
  - cold applied
- completing at least one (1) of the following earth bond methods:

  - lead wiping
  - mechanical
- using at least two (2) of the following cable conductor connection methods:
  - mechanical connector
  - compression lug
  - insulating piercing connector
- completing at least one (1) of the following cable maintenance tasks:
  - outer sheath repair
  - insulation repair
- completing at least two (2) of the following cable tests:
  - moisture content*
  - voltage
  - insulation resistance
  - phase identification
  - phase rotation
  - *(must do)
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - LV energised work principles and procedures
  - specialised equipment for LV energised work
  - working in confined spaces
  - excavation and trench safety
  - LPG equipment and testing
  - safe approach distances
  - manual handling
- hazard, risk assessment and risk control requirements including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- cable alignment and identification

- work plan requirements, including:
  - types of and layout of drawings
  - manufacturer's instructions
  - testing plan
  - quality checklist
  - workplace documentation procedures
- LV paper insulated cable, including:
  - types and sizes
  - construction, characteristics and properties
  - minimum bending radius
- cable jointing, terminating and maintenance requirements:
  - cable handling techniques
  - energised jointing, terminating and maintenance principles, techniques and procedures
  - earth bonding methods and procedures
  - types of cable damage/defects
  - cable repair techniques and procedures
  - testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used for jointing, terminating and maintaining energised LV underground paper insulated cable
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and manufacturer's instructions.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU011 Joint, terminate and maintain energised low voltage underground polymeric cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to joint, terminate and maintain energised low voltage (LV) underground polymeric cable in the electricity supply industry (ESI).

It includes jointing, terminating, repairing and testing of cable in existing installations.

It also includes using a range of tools, specialised equipment, materials and manufacturer's instructions.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to joint, terminate and maintain energised LV underground polymeric cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Carry out the jointing, terminating and maintenance of energised LV underground polymeric cable	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Manual handling, working in confined spaces and use of tools, equipment and PPE are carried out in accordance with workplace requirements

	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Specialised equipment is used in accordance with workplace requirements
	2.5	Cable is prepared for jointing, terminating or maintenance in accordance with manufacturer's instructions and workplace requirements
	2.6	Cable is tested before jointing or terminating in accordance with the work plan and workplace requirements
	2.7	Cable is jointed, terminated or maintained in accordance with manufacturer's instructions and workplace requirements
	2.8	Cable is tested after jointing or terminating in accordance with the work plan and workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.10	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements
	3.7	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ28 Joint and maintain energised low voltage underground polymeric cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU011 Joint, terminate and maintain energised low voltage underground polymeric cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - protecting existing underground services
  - handling underground power cables
  - using liquefied petroleum gas (LPG)
  - applying shoring requirements
  - applying low voltage (LV) energised work principles
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- completing at least two (2) of the following cable joints:
  - tee-off
  - straight
  - breech
- completing at least one (1) of the following cable terminations:
  - LV switchboard
  - pillar/turret
  - lighting column
- using at two (2) of the following cable jointing/terminating methods:
  - resin
  - heat shrink
  - cold applied
- using at least two (2) of the following cable conductor connection methods:
  - compression lug

  - insulation piercing connector
  - mechanical connector
- completing at least one (1) of the following cable maintenance tasks:
  - outer sheath repair
  - insulation repair
- completing at least two (2) of the following cable tests:
  - voltage
  - insulation resistance
  - phase identification
  - phase rotation
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - LV energised work principles and procedures
  - specialised equipment for LV energised work
  - working in confined spaces
  - excavation and trench safety
  - LPG equipment and testing
  - safe approach distances
  - manual handling
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- cable alignment and identification
- work plan requirements, including:
  - types of and layout of drawings
  - manufacturer's instructions
  - testing plan
  - quality checklist
  - workplace documentation procedures

- LV polymeric cables, including:
  - types and sizes
  - construction, characteristics and properties
  - minimum bending radius
- cable jointing, terminating and maintenance requirements, including:
  - cable handling techniques
  - energised jointing, terminating and maintenance principles, techniques and procedures
  - types of cable damage/defects
  - cable repair techniques and procedures
  - testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used for jointing, terminating and maintaining energised LV underground polymeric cable
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and manufacturer's instructions.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU012 Joint, terminate and maintain high voltage underground paper insulated cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to joint, terminate and maintain high voltage (HV) underground paper insulated cable in the electricity supply industry (ESI).

It includes jointing, terminating and the testing of cable in new installations. It also includes maintaining cable in existing installations, including repairing, replacing, re-jointing or re-terminating and testing of de-energised cable.

It includes using a range of tools, equipment, specialised materials and manufacturer's instructions.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to joint, terminate and maintain HV underground paper insulated cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Worksite is prepared in accordance with work plan and workplace requirements
2 Carry out jointing and terminating of HV underground paper insulated cable in new installations	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Manual handling, working in confined spaces, the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements

	2.4	Cable is tested before jointing or terminating in accordance with work plan and workplace requirements
	2.5	Cable is prepared for jointing or terminating in accordance with the work plan and workplace requirements
	2.6	Cable is jointed or terminated in accordance with the work plan and workplace requirements
	2.7	Cable is tested after jointing or terminating in accordance with work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out maintenance of de-energised HV underground paper insulated cable	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Manual handling, working in confined spaces, the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Cable is identified and spiked or cut in accordance with workplace requirements
	3.5	Work permit is received and signed in accordance with workplace requirements
	3.6	Cable is tested before maintenance in accordance with the work plan and workplace procedures
	3.7	Cable is prepared for maintenance in accordance with manufacturer's instructions and workplace requirements
	3.8	Cable is maintained in accordance with manufacturer's instructions and workplace requirements
	3.9	Work permits are signed off in accordance with workplace requirements

	3.10	Cable, cable joint or termination is tested in accordance with the work plan and workplace requirements
	3.11	Incidents or unplanned events are responded to in accordance with workplace requirements
	3.12	Quality checks of work are undertaken in accordance with work plan and workplace requirements
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ23 Install and maintain de-energised high voltage underground paper insulated cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU012 Joint, terminate and maintain high voltage underground paper insulated cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - protecting existing underground services
  - handling underground power cables
  - using liquefied petroleum gas (LPG)
  - applying shoring requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- completing at least one (1) of the following cable joints:
  - tee-off
  - straight
  - breech
- completing at least one (1) of the following cable terminations:
  - pole top
  - transformer
  - switchgear
- using at least one (1) of the following cable jointing/terminating products:
  - taped resin
  - heat shrink
  - cold applied
- completing at least one (1) of the following earth bond methods:
  - lead wiping
  - mechanical

- completing at least one (1) of the following cable maintenance tasks:
  - outer sheath repair
  - insulation repair
- completing at least one (1) of the following to determine the cable electrical status:
  - spiking
  - guillotine/remote cutting
- completing at least three (3) the following cable tests:
  - moisture content*
  - voltage
  - continuity
  - insulation resistance
  - phase identification
  - (*must do)
- using at least one (1) of the following cable conductor connection methods:
  - compression lug
  - mechanical connector
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safe work practices, including:
  - working in confined spaces
  - excavation and trench safety
  - LPG equipment and testing
  - cable spiking, guillotine/remote cutting
  - manual handling
- cable alignment and identification

- work plan requirements, including:
  - types of and layout of drawings
  - manufacturer's instructions
  - construction manuals
  - testing plan
  - quality checklist
  - workplace documentation procedures
- high voltage (HV) paper insulated cables, including:
  - types and sizes
  - construction, characteristics and properties
  - minimum bending radius
- cable jointing, terminating and maintenance requirements, including:
  - cable handling techniques
  - jointing, terminating and maintenance principles, techniques and procedures
  - earth bonding methods and procedures
  - cable moisture testing procedures
  - types of cable damage/defects
  - use of test equipment
  - testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for jointing, terminating and maintaining HV underground paper insulated cable
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to joint, terminate and maintain high voltage (HV) underground polymeric cable in the electricity supply industry (ESI).

It includes jointing, terminating and the testing of cable in new installations. It also includes maintaining cable in existing installations, including repairing, replacing, re-jointing or re-terminating and testing of de-energised cable.

It includes using a range of tools, equipment, specialised materials and manufacturer's instructions.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to joint, terminate and maintain HV underground polymeric cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Carry out the jointing and terminating of HV underground polymeric cable in new installations	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Manual handling, working in confined spaces and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements

	2.4	Cable is tested before jointing or terminating in accordance with the work plan and workplace procedures
	2.5	Cable is prepared for jointing or terminating in accordance with manufacturer's instructions and workplace requirements
	2.6	Cable is jointed or terminated in accordance with manufacturer's instructions and workplace requirements
	2.7	Cable is tested after joining or terminating in accordance with the work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out the maintenance of de-energised HV underground polymeric cable	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Manual handling working in confined spaces and the use of tools, equipment and PPE are followed in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Cable is identified and spiked or cut in accordance with workplace requirements
	3.5	Work permits are received and signed in accordance with workplace requirements
	3.6	Cable is tested in accordance with the work plan and workplace requirements
	3.7	Cable is prepared for maintenance in accordance with manufacturer's instructions and workplace requirements
	3.8	Cable is maintained in accordance with manufacturer's instructions and workplace requirements
	3.9	Work permits are signed off in accordance with

		workplace requirements
	3.10	Cable, cable joint and termination are tested in accordance with the work plan and workplace requirements
	3.11	Incidents or unplanned events are responded to in accordance with workplace requirements
	3.12	Quality checks of work are undertaken in accordance with work plan and workplace procedures
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ27 Install and maintain de-energised high voltage underground polymeric cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - protecting existing underground services
  - handling underground power cables
  - using liquefied petroleum gas (LPG)
  - applying shoring requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- completing at least one (1) of the following cable joints:
  - tee-off
  - straight through
  - breech
- using at least one (1) of the following cable jointing/terminating products:
  - taped resin
  - heat shrink
  - cold applied
- completing at least two (2) of the following cable terminations:
  - pole top
  - transformer
  - switchgear
- using the following cable connection methods:
  - mechanical connector
  - compression lug

- completing at least one (1) of the following cable maintenance tasks:
  - repair outer sheath
  - replace termination lug
- completing at least one (1) of the following to determine cable electrical status:
  - spiking
  - guillotine/remote cutting
- completing at least two (2) of the following cable tests:
  - voltage
  - continuity
  - insulation resistance
  - phase identification
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - working in confined spaces
  - excavation and trench safety
  - LPG equipment and testing
  - cable spiking, guillotine/remote cutting
  - manual handling
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events that constitute an incident or unplanned event
- procedures for responding to an unplanned event or incident
- cable alignment and identification
- work plan requirements, including:
  - types of and layout of drawings
  - manufacturer's instructions
  - testing plan
  - quality checklist
  - workplace documentation procedures

- high voltage (HV) polymeric cables, including:
  - types and sizes
  - construction, characteristics and properties
  - electrical stress control
  - minimum bending radius
- cable jointing, terminating and maintenance requirements, including:
  - cable handling techniques
  - jointing principles, techniques and procedures
  - cable repair techniques and procedures
  - types of cable damage/defects
  - use of test equipment
  - testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used for jointing, terminating and maintaining HV underground polymeric cable
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and manufacturer's instructions.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU014 Joint, terminate and maintain low voltage underground paper insulated cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to joint, terminate and maintain low voltage (LV) underground paper insulated cable in the electricity supply industry (ESI).

It includes jointing, terminating and the testing of cable in new installations. It also includes maintaining cable in existing installations including repairing, replacing, re-jointing or re-terminating and testing of de-energised cable.

It includes using a range of tools, equipment, specialised materials and manufacturer's instructions.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to joint, terminate and maintain LV underground paper insulated cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Worksite is prepared in accordance with workplace requirements
2 Carry out jointing and terminating of LV underground paper insulated cable in new installations	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Manual handling, working in confined spaces and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements

	2.4	Cable is tested before jointing or terminating in accordance with the work plan and workplace requirements
	2.5	Cable is prepared for jointing or terminating in accordance with workplace requirements
	2.6	Cable is jointed or terminated in accordance with workplace requirements
	2.7	Cable is tested after jointing or terminating in accordance with the work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out the maintenance of de-energised LV underground paper insulated cable	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Manual handling, working in confined spaces and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Cable is identified and spiked or cut in accordance with workplace requirements
	3.5	Work permits are received and signed in accordance with workplace requirements
	3.6	Cable is tested before the maintenance in accordance with the work plan and workplace procedures
	3.7	Cable is prepared for maintenance in accordance with manufacturer's instructions and workplace requirements
	3.8	Cable is maintained in accordance with manufacturer's instructions and workplace requirements
	3.9	Work permits are signed off in accordance with

		workplace requirements
	3.10	Cable, cable joint or termination is tested in accordance with the work plan and workplace requirements
	3.11	Incidents or unplanned events are responded to in accordance with workplace requirements
	3.12	Quality checks of work are undertaken in accordance with work plan and workplace procedures
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.5	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ22 Install and maintain de-energised low voltage underground paper insulated cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU014 Joint, terminate and maintain low voltage underground paper insulated cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - protecting existing underground services
  - handling underground power cables
  - using liquefied petroleum gas (LPG)
  - applying shoring requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- completing at least one (1) of the following cable joints:
  - tee-off
  - straight
  - breech
- completing at least one (1) of the following cable terminations:
  - pole top
  - transformer
  - low voltage (LV) switchboard
  - pillar/turret
- using at least one (1) of the following cable jointing/terminating products:
  - taped resin
  - heat shrink
  - cold applied
- completing at least one (1) of the following earth bond methods:
  - lead wiping

  - mechanical
- completing at least one (1) of the following cable maintenance tasks:
  - outer sheath repair
  - insulation repair
- completing at least one (1) of the following to determine the cable electrical status:
  - spiking
  - guillotine/remote cutting
  - safe/live cut
- completing at least three (3) the following cable tests:
  - moisture content*
  - voltage
  - continuity
  - insulation resistance
  - phase identification
  - (*must do)
- using at least one (2) of the following cable conductor connection methods:
  - compression lug
  - mechanical connector
  - insulation piercing connector
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safe work practices, including:
  - working in confined spaces
  - excavation and trench safety
  - LPG equipment and testing

    - cable spiking, guillotine/remote cutting or safe/live cut
    - manual handling
- cable alignment and identification
- work plan requirements, including:
    - layout of drawings
    - manufacturer's instructions
    - construction manuals
    - testing plan
    - quality checklist
    - workplace documentation procedures
- LV paper insulated cables, including:
    - types and sizes
    - construction, characteristics and properties
    - minimum bending radius
- cable jointing, terminating and maintenance requirements, including:
    - cable handling techniques
    - jointing principles, techniques and procedures
    - earth bonding methods and procedures
    - cable moisture testing procedures
    - types of cable damage/defects
    - use of test equipment
    - testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for jointing, terminating and maintaining LV underground paper insulated cable
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and manufacturer's instructions.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to joint, terminate and maintain low voltage (LV) underground polymeric cable in the electricity supply industry (ESI).

It includes jointing, terminating and the testing of cable in new installations. It also includes maintaining cable in existing installations including repairing, replacing, re-jointing or re-terminating and testing of de-energised cable.

It includes using a range of tools, equipment, specialised materials, and manufacturer's instructions.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to joint, terminate and maintain LV underground polymeric cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Worksite is prepared in accordance with work plan and workplace requirements
2 Carry out the jointing and terminating of LV underground polymeric cable in new installations	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Manual handling, working in confined spaces and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements

	2.4	Cable is tested before jointing or terminating in accordance with the work plan and workplace requirements
	2.5	Cable is prepared for jointing or terminating in accordance with the work plan and workplace requirements
	2.6	Cable is jointed or terminated in accordance with manufacturer's instructions and workplace requirements
	2.7	Cable is tested after jointing or terminating in accordance with the work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out the maintenance of de-energised LV underground polymeric cable	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Manual handling, working in confined spaces and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Cable is identified and spiked or cut in accordance with workplace requirements
	3.5	Work permits are received and signed in accordance with workplace requirements
	3.6	Cable is tested before the maintenance in accordance with the work plan and workplace procedures
	3.7	Cable is prepared for maintenance in accordance with manufacturer's instructions and workplace requirements
	3.8	Cable is maintained in accordance with manufacturer's instructions and workplace requirements

	3.9 Work permits are signed off in accordance with workplace requirements
	3.10 Cable is tested after maintenance in accordance with the work plan and workplace requirements
	3.11 Incidents or unplanned events are responded to in accordance with workplace requirements
	3.12 Quality checks of work are undertaken in accordance with work plan and workplace procedures
4 Complete work and documentation	**4.1** Completed work is checked for compliance against the work plan and workplace requirements
	4.2 Incidents or unplanned events are reported in accordance with workplace requirements
	4.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4 Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ26 Install and maintain de-energised low

voltage underground polymeric cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - protecting existing underground services
  - handling underground power cables
  - using liquefied petroleum gas (LPG)
  - applying shoring requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- completing at least two (2) of the following cable joints:
  - tee-off
  - straight
  - breech
- completing at least two (2) of the following cable terminations:
  - pole top
  - transformer
  - low voltage (LV) switchboard
  - pillar/turret
  - lighting column
- using at least two (2) of the following cable jointing/terminating products:
  - resin filled
  - heat shrink
  - cold applied
- using at least two (2) of the following cable conductor connection methods:

    - compression lug
    - mechanical connector
    - insulation piercing connector
- completing at least one (1) of the following cable maintenance tasks:
    - outer sheath repair
    - insulation repair
    - core repair
- completing at least one (1) of the following to determine the cable electrical status:
    - cable spiking
    - guillotine/remote cutting
    - safe/live cut
- completing at least two (2) of the following cable tests:
    - voltage
    - continuity
    - insulation resistance
    - phase identification
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
    - WHS/OHS
    - working in confined spaces
    - excavation and trench safety
    - LPG equipment and testing
    - cable spiking, guillotine/remote cutting or safe/live cut
    - safe approach distances
    - manual handling
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- cable alignment and identification
- work plan requirements, including:

  - types of and layout of drawings
  - manufacturer's instructions
  - testing plan
  - quality checklist
  - workplace documentation procedures
- LV polymeric cables, including:
  - types and sizes
  - construction, characteristics and properties
  - minimum bending radius
- cable jointing, terminating and maintenance requirements:
  - cable handling techniques
  - jointing, terminating and maintenance principles, techniques and procedures
  - types of cable damage/defects
  - cable repair techniques and procedures
  - use of test equipment
  - testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used for jointing, terminating and maintaining LV underground polymeric cable
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and manufacturer's instructions.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU016 Lay power cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to lay power cables in the electricity supply industry (ESI).

It includes positioning and using plant and equipment for direct laying of cables in trenches, on racks and in conduit or ducts.

It also includes bedding and protecting cables, cable pulling methods, sealing cable ends and backfilling the excavation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to lay power cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

		be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4	Plant, tools, equipment, and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5	Communication method for the laying is confirmed with other workers
	1.6	Hazards are identified, risks assessed and control measures identified and applied
	1.7	Cable route is confirmed, excavated and bedded in accordance with the work plan and workplace requirements
	1.8	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.9	Worksite is prepared in accordance with the work plan and workplace requirements
	1.10	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out laying of power cable	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working in confined spaces, the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Cable laying plant and equipment is positioned in accordance with the work plan and workplace requirements
	2.5	Conduit and cable are laid, cable is bedded and protected in accordance with the work plan and workplace requirements

	2.6	Communication with other workers is maintained during the laying of cables in accordance with the work plan and workplace requirements
	2.7	Cable ends are sealed in accordance with the work plan and workplace requirements
	2.8	Backfilling is confirmed in accordance with the work plan and workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.10	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Personnel are notified of work completion in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ21 Lay ESI electrical cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU016 Lay power cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - using liquefied petroleum gas (LPG)
  - excavation/trench safety
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- interpreting and using drawings, diagrams and instructions
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- laying of cables, including:
  - high voltage (HV) polymeric
  - low voltage (LV) polymeric
  - laying and sealing conduits
  - positioning cable laying plant and equipment
  - sealing cable ends
  - bedding and protecting cables
- backfilling open trench in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - excavation/trench safety
  - use of LPG
- hazard, risk assessment and risk control requirements, including potential hazards

- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- diagrams/plans
- power cables, including:
  - cables types and sizes
  - cable construction and bending radius
- cable laying, including:
  - excavation/trenching
  - conduit laying and sealing
  - cable alignments and depths
  - plant, tools and equipment for cable laying
  - clearance from other underground cables or buried utilities
  - cable handling
  - cable laying methods
  - cable pulling methods
  - cable tensioning methods
  - cable protection methods
  - cable sealing
  - bedding and backfilling.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for laying power cables
- applicable documentation, including workplace requirements, relevant industry standards, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU017 Locate faults in underground power cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to locate faults in underground power cables in the electricity supply industry (ESI).

It includes setting up test equipment and using the equipment to pre locate and pinpoint the cable fault. It also includes interpreting test results, documenting the fault location and likely cause and listing recommendations for correcting the cable fault.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to locate underground power cable faults	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work instruction is obtained and confirmed in accordance with workplace requirements
	1.3 Tools, equipmentand personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work instruction and workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite is prepared in accordance with the work instruction and workplace requirements
2 Carry out the locating of underground power cable faults	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working in a confined space, and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Test equipment is positioned, set up for testing and confirmed to be operating correctly
	2.5 Cable is tested and confirmed de-energised in accordance with workplace requirements
	2.6 Work permits are received and signed in accordance with workplace requirements

	2.7 Cable is prepared for testing and test equipment connected to the cable in accordance with workplace requirements
	2.8 Cable is tested to pre-locate the cable fault in accordance with workplace requirements
	2.9 Cable is tested to pinpoint the location of the cable fault in accordance with workplace requirements
	2.10 Cable faults are identified and analysed in accordance with workplace requirements
	2.11 Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1** Recommendations for rectification are made in accordance with workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements
	3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4 Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5 Work permits are signed off in accordance with workplace requirements
	3.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS58 Locate faults in power system underground power cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU017 Locate faults in underground power cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- using at least one (1) of the following cable fault pre location methods for low resistance faults:
  - time-domain reflectometry (TDR)
  - bridge method (e.g. Murray Loop)
- using at least one (1) of the following cable fault prelocation methods for high resistance faults:
  - arc reflection
  - voltage decay
  - impulse current
  - bridge (Murray loop)
- using at least one (1) of the following cable fault pinpointing methods:
  - acoustic detection using surge generator (thumper)
  - audio frequency pinpointing using twist method
  - fault sniffing
  - step voltage (pool of potential test or earth gradient method)
- locating at least three (3) of the following cable faults:
  - short circuit
  - open circuits

    - high resistance
    - earth and sheath
    - humid and wet
    - flashing
- analysing the testing results to determine the type and location of fault
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
    - WHS/OHS
    - safe approach distances
    - working in confined spaces
    - trench safety
    - manual handling
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of work permits
- events that constitute an incident or unplanned event
- procedures for responding to an unplanned event or incident
- work instruction requirements, including:
    - types of and layout of drawings
    - cable routes
    - manufacturer's instructions
    - workplace documentation procedures
- high voltage (HV) and low voltage (LV) paper insulated and polymeric cables, including:
    - types and sizes
    - construction, characteristics and properties
    - minimum bending radius
- cable fault location, including:
    - types of and causes of cable defects
    - types of and causes of cable faults
    - low resistance cable fault pre-location methods
    - high resistance cable fault pre-location methods
    - cable fault pinpointing methods

- advantages and disadvantages of different testing methods
- types of cable fault locating equipment
- use of cable fault locating equipment
- cable fault locating procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for locating faults in underground power cables
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU019 Transition joint high voltage paper insulated cable to high voltage polymeric cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to transition joint high voltage (HV) paper insulated cable to HV polymeric cable in the electricity supply industry (ESI).

It includes confirming that the cables are de-energised and the testing of cables using a range of tools, equipment, specialised materials and manufacturer's instructions.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to transition HV paper insulated cable to HV polymeric cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Work permits are organised in accordance with workplace requirements
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Carry out the transitioning of HV paper insulated cable to HV polymeric cable	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Manual handing, working in confined spaces and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance

		with workplace requirements
	2.4	Cable is identified and spiked or cut in accordance with workplace requirements
	2.5	Work permits are received and signed in accordance with workplace requirements
	2.6	Cables are tested in accordance with workplace requirements
	2.7	Cables are prepared for jointing in accordance with manufacturer instructions and workplace requirements
	2.8	Cables are jointed in accordance with manufacturer instructions and workplace requirements
	2.9	Work permits are signed off in accordance with workplace requirements
	2.10	Cables and cable joint are tested in accordance with workplace requirements
	2.11	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.12	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRCJ25 Perform straight through high voltage paper insulated to polymeric transition joint.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU019 Transition joint high voltage paper insulated cable to high voltage polymeric cable

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - protecting existing underground services
  - handling underground power cables
  - using liquefied petroleum gas (LPG)
  - applying shoring requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- jointing at least one (1) of the following cable types:
  - belted paper insulated cable to polymeric
  - screened paper insulated cable to polymeric
- completing at least one (1) of the following cable joints:
  - three core paper insulated to three core polymeric
  - three core paper insulated to 3 x 1 core polymeric
  - three core paper insulated to trifurcated three core polymeric
  - single core paper insulated to single core polymeric
- using at least one (1) of the following cable jointing/terminating products:
  - taped resin
  - heat shrink
  - cold applied
- completing at least one (1) of the following earth bond methods:
  - lead wiping
  - mechanical

- using at least one (1) of the following cable conductor connection methods:
  - compression lug
  - mechanical connector
- completing at least one (1) of the following to determine the cable electrical status:
  - spiking
  - guillotine/remote cutting
- completing at least three (3) of following cable tests:
  - moisture content*
  - continuity
  - insulation resistance
  - phase identification
  - (*must do)
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - working in confined spaces
  - excavation and trench safety
  - LPG equipment and testing
  - cable spiking, guillotine/remote cutting
  - safe approach distances
  - manual handling
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- cable alignment and identification
- work plan requirements, including:
  - types of and layout of drawings
  - manufacturer's instructions
  - testing plan
  - quality checklist

    - completion of workplace documentation
- high voltage (HV) paper insulated and polymeric cables, including:
    - types and sizes
    - construction, characteristics and properties
    - electrical stress control
    - minimum bending radius
- cable jointing, terminating and maintenance requirements, including:
    - cable handling techniques
    - jointing principles, techniques and procedures
    - earth bonding methods and procedures
    - cable moisture testing procedures
    - types of cable damage/defects
    - cable repair techniques and procedures
    - use of test equipment
    - testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for transitioning HV paper insulated cable to HV polymeric cable
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and manufacturer's instructions.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU020 Joint, terminate and maintain gas and oil filled underground cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to joint, terminate and maintain gas and oil filled underground cable 33 kilovolt (kV) and above, in the electricity supply industry (ESI).

It includes maintenance of gas and oil filled underground cables, the preparation of cables and phasing out, jointing and terminating and the preparation of the cable jointing bay.

It also includes the relevant safety procedures to ensure installation of cable is undertaken according to workplace requirements.

Note: Entry into this unit is for users who:

- *hold Certificate III in ESI - Distribution Underground - powerline worker qualification or equivalent.*

and

- *hold UETDRDU012 Joint, terminate and maintain high voltage underground paper insulated cable or equivalent*

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to joint, terminate and maintain gas and oil filled underground cables	**1.1** Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.2 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.3 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work permits are received and signed in accordance with workplace requirements
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Joint, terminate and maintain gas and oil filled underground cables	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Specialised equipment is used in accordance with workplace requirements
	2.5 Cable is prepared for jointing, terminating and maintenance in accordance with manufacturer's instructions and workplace requirements
	2.6 Cable is tested before jointing or terminating in

		accordance with the work plan and workplace requirements
	2.7	Cable is jointed, terminated and maintained in accordance with manufacturer's instructions and workplace requirements
	2.8	Cable is tested after jointing or terminating in accordance with the work plan and workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work permits are signed off in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDU008 Install gas and oil filled specialised underground cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU020 Joint, terminate and maintain gas and oil filled underground cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one (1) occasion and include:

- applying relevant legislation, regulations, standards, codes of practice and workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing relevant work permits in accordance with workplace requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- maintaining the following 33 kilovolt (kV) and above, pressurised cable types:
  - oil filled cables
  - gas filled cables
- performing at least two (2) of the following jointing methods:
  - straight through joint
  - straight stop joint
  - trifurcating joint
  - splitter joint
  - trifurcating/transition/stop
- performing at least two (2) of the following termination methods:
  - oil pressurised outdoor sealing end
  - gas impregnated switchgear (GIS) termination
  - gas filled termination
  - compound filled termination
- performing one (1) pressured plumbing connection
- performing at least two (2) of the following connections and techniques:
  - welded connectors
  - sweated connectors
  - compression connectors
- using specialist testing devices including:

    - voltage detectors
    - cable identification equipment and spiking
    - insulation resistance testers
- testing cable for residual gases
- using the following equipment and materials:
    - leak repair and pressure control cable freezing equipment
    - pressure control tapes
    - fittings and seals
- undertaking preparation for cable freezing, preliminary pressure control, and leak repair activities
- using the following cable terminating materials:
    - paper tape
    - paper rolls.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- gas and oil filled underground cable principles, including:
    - types of oil or gas filled underground cables - properties of paper insulation, oil and nitrogen gas, construction, reasons for gas and/or oil filled, characteristics and capabilities of the cable, and pressure/volume characteristics of gas and oil
    - precautions when handling
    - types and functions of tools and equipment used on oil or gas filled underground cables
    - techniques when handling, topping, storing and disposing of oil or gas filled underground cables
- maintaining oil or gas filled underground cables including:
    - types, function and serviceability of tools and equipment used for the maintenance of oil or gas filled underground cables
    - techniques in the safe maintenance of oil or gas filled underground cables
    - techniques in the safe testing/inspection of the oil or gas filled underground cables
- jointing and terminating oil or gas filled underground cables including:
    - types, function and serviceability of tools and equipment used for the jointing and terminating of oil or gas filled underground cables
    - techniques in the safe jointing and terminating oil or gas filled underground cables

- techniques in the safe testing of the oil or gas filled underground cables
- gas and oil pressurised systems including:
  - types, characteristics and capabilities of pressurised systems
  - types and functions of specialised tools
  - techniques when testing, inspecting, handling, storing and disposing of pressurised systems
  - techniques in the safe maintenance of pressurised systems
  - techniques in the safe use of tools and equipment
  - techniques in determining route profiles and access locations.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so. Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU021 Joint, terminate and maintain underground polymeric cable 33kV and above

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to joint, terminate and maintain underground polymeric cable 33 kilovolt (kV) and above, in the electricity supply industry (ESI).

It includes jointing, terminating and the testing of polymeric cables 33kV and above using a range of tools, equipment, specialised materials and manufacturer's instructions.

Note: Those holding an existing Certificate III ESI qualification in cable jointing, distribution underground or equivalent meet the prerequisite unit requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to joint, terminate and maintain underground polymeric cable	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Joint and terminate underground polymeric cable	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Manual handling, working in confined spaces and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Cable is tested before jointing or terminating in accordance with the work plan and workplace

		requirements
	2.5	Cable is prepared for jointing or terminating in accordance with manufacturer's instructions and workplace requirements
	2.6	Cable is jointed or terminated in accordance with manufacturer's instructions and workplace requirements
	2.7	Cable is tested after joining or terminating in accordance with the work plan and workplace requirements
	2.8	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Maintain underground polymeric cable	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Manual handling working in confined spaces and the use of tools, equipment and PPE are followed in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Cable is identified and spiked or cut in accordance with workplace requirements
	3.5	Work permits are received and signed in accordance with workplace requirements
	3.6	Cable is tested in accordance with the work plan and workplace requirements
	3.7	Cable is prepared for maintenance in accordance with manufacturer's instructions and workplace requirements
	3.8	Cable is maintained in accordance with manufacturer's instructions and workplace requirements
	3.9	Work permits are signed off in accordance with workplace requirements
	3.10	Cable, cable joint and termination are tested in accordance with the work plan and workplace requirements
	3.11	Quality checks of work are undertaken in accordance with work plan and workplace procedures

4 Complete work and documentation	**4.1** Completed work is checked for compliance against the work plan and workplace requirements
	4.2 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.3 Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.4 Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.5 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDU006 Install and maintain polymeric specialised underground cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU021 Joint, terminate and maintain underground polymeric cable 33kV and above

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- completing at least two (2) of the following cable tests:
  - continuity
  - insulation resistance
  - phase identification
- jointing, terminating and maintaining at least one (1) of the following 33 kilovolt (kV) and above cable types:
  - cross-linked polyethylene (XLPE) cables
  - ethylene propylene rubber (EPR) cables
- completing the following cable joints:
  - straight through joint
  - termination
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice, and organisational workplace

requirements including, WHS/OHS requirements
- hazard, risk assessment and risk control requirements including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- cable alignment and identification
- work plan requirements, including:
  - types and layout of drawings
  - manufacturer's instructions
  - testing plan
  - quality checklist
  - workplace documentation procedures
- polymeric cables 33 kV and above including:
  - types and sizes
  - construction, characteristics and properties
  - electrical stress control
  - minimum bending radius
- cable jointing, terminating and maintenance requirements for cables 33 kV and above including:
  - cable handling techniques
  - jointing principles, techniques and procedures
  - cable repair techniques and procedures
  - types of cable damage/defects
  - use of test equipment
  - testing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry

- applicable documentation, including workplace requirements, relevant industry standards, manufacturers specifications, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRDU022 Maintain gas and oil pressure systems for underground cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain gas and oil pressure systems for underground cables in the electricity supply industry (ESI).

It includes using specialised gas and oil processing and control equipment, determining route profiles and the operation of pressurised equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDRDU020 Joint, terminate and maintain gas and oil filled underground cables

Competency Field

Distribution Underground

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain gas and oil pressure systems	**1.1** Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace

for underground cables		requirements
	1.2	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.3	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirement
	1.4	Hazards are identified, risks assessed, and control measures identified and applied
	1.5	Work permits are received and signed in accordance with workplace requirements
	1.6	Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.7	Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain gas and oil pressure systems for underground cables	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Gas and oil pressure systems for underground cables are maintained in accordance with the manufacturer's instructions, work plan and workplace requirements
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.6	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements

3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements

3.4 Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements

3.5 Work permits are signed off in accordance with workplace requirements

3.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRDU003 Install and maintain gas and oil pressure systems for specialised underground cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRDU022 Maintain gas and oil pressure systems for underground cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one (1) occasion and include:

- applying relevant legislation, regulations, standards, codes of practice and workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing relevant work permits in accordance with workplace requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- using the following gas and oil processing and control equipment:
  - gas analyser/detector
  - cable freezing equipment
  - accessory impregnation equipment
  - oil degasification plant
  - manometers
  - flow boards
  - vacuum pumps
  - site bottles
  - gas cylinders
  - liquid nitrogen cylinders
  - pressure/vacuum meters
  - oil evacuation pumps
  - gas and oil piping equipment
  - oil sampling equipment
- using the following gas processing and control equipment:
  - gas control cubicles
  - nitrogen packs
- using the following oil processing and control equipment:
  - oil control cubicles
  - oil degasification units

    - oil pressure tanks
- maintaining oil and gas filled underground cables including jointing and terminating
- dealing with unplanned events on at least one (1) occasion.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- oil and gas filled underground cables including:
    - types of cables, including properties of paper insulation, construction, reasons for gas or oil filled cables, characteristics and capabilities of the cable, pressure and volume characteristics of gas and oil, and precautions when handling
    - types and functions of tools and equipment
    - techniques when testing, inspecting, handling, storing and disposing of cables
- gas and oil pressurised systems including:
    - types, characteristics and capabilities of pressurised systems
    - types and functions of specialised tools
    - techniques when testing, inspecting, handling, storing and disposing of pressurised systems
    - techniques in the safe maintenance of pressurised systems
    - techniques in the safe use of tools and equipment
    - techniques in determining route profiles and access locations.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDREL001 Apply environmental requirements

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to apply environmental requirements in the electricity supply industry (ESI).

It includes participating in and contributing to environmental requirements for specific projects/sites, identifying and controlling possible environmental risks and impacts, and recording and reporting environmental incidents.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to apply environmental	**1.1** Environmental legislation, regulations, standards, codes of practice and organisational workplace requirements

requirements		for the work to be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Environmental hazards are identified, risks assessed and control measures identified and applied
	1.4	Work permits/approvals are organised in accordance with workplace requirements
	1.5	Plant, materials, vehicles, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6	Worksite is prepared in accordance with the work plan and workplace requirements
2 Apply environmental requirements	**2.1**	Environmental legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Environmental hazard control measures are monitored in accordance with workplace requirements
	2.3	Work permits/approvals are applied in accordance with workplace requirements
	2.4	Plant, materials, vehicles, tools, equipment and PPE are used in accordance with workplace requirements
	2.5	Environmental incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits/approvals are finalised in accordance with workplace requirements
	3.3	Environmental incidents or unplanned events are reported in accordance with workplace requirements
	3.4	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.5	Plant, vehicles, tools, and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.6 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.7 Environmental work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL11 Apply sustainable energy and environmental procedures.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDREL001 Apply environmental requirements

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - environmental
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- applying and monitoring environmental requirements
- completing environmental risk assessment
- using plant, vehicles, materials, tools and equipment safely
- maintaining a safe and clean workplace environment
- organising and finalising relevant work permits/approvals in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - manufacturer and supplier information of hazardous substances/dangerous goods, including safety data sheets (SDS)
- hazards, risk assessment and risk control requirements, including potential hazards
- types and application of PPE

- application, purpose and types of work permits/approvals
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- employer and employee responsibilities
- source information on environmental issues and updates
- environmental impacts from work-related activities
- environmental terminology used in the electricity supply industry (ESI)
- workplace environmental management plan
- methods of cleaning mobile plant, equipment and tools
- safe use of plant, vehicles, materials, tools and equipment
- types and application of PPE used for hazardous substances and dangerous goods/materials
- procedures for handling plant, tools and equipment that contain hazardous substances
- procedures for handling, controlling, storing, recycling and disposing of:
  - hazardous substances
  - waste materials
- emergency procedures for spillages of hazardous substances to reduce risks to the environment, including:
  - methods of cleaning up excessive spillages
  - methods of protection to surrounding environment
  - procedures for notification of relevant personnel and authorities
  - procedures for reporting and recording incidents
- environmentally sensitive areas, including:
  - identification of
  - working in
  - procedures for entering and exiting
- fire precautions for field work.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in

industry for applying environmental requirements
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDREL002 Comply with environmental requirements

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to comply with environmental requirements in the electricity supply industry (ESI).

It includes complying with and monitoring environmental requirements, risks and impacts. It also includes recording and reporting environmental incidents.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to comply with environmental	**1.1** Environmental legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and

requirements		confirmed
	1.2	Work plan is confirmed in accordance with workplace requirements
	1.3	Environmental hazards are identified, risks assessed and control measures identified and confirmed
	1.4	Work permits/approvals are received and confirmed in accordance with workplace requirements
	1.5	Plant, materials, vehicles, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6	Worksite is prepared in accordance with the work plan and workplace requirements
2 Comply with environmental requirements	**2.1**	Environmental legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are complied with and monitored
	2.2	Environmental hazard control measures are monitored in accordance with workplace requirements
	2.3	Work permits/approvals are complied with in accordance with workplace requirements
	2.4	Plant, materials, vehicles, tools, equipment and PPE are used in accordance with workplace requirements
	2.5	Environmental incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits/approvals are finalised in accordance with workplace requirements
	3.3	Environmental incidents or unplanned events are reported in accordance with workplace requirements
	3.4	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.5	Plant, vehicles, tools, and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.6 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.7 Environmental work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL13 Comply with sustainability, environmental and incidental response policies and procedures.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDREL002 Comply with environmental requirements

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- complying with relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - environmental
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- complying with and monitoring environmental requirements
- using plant, vehicles, materials, tools and equipment safely
- maintaining a safe and clean workplace environment
- dealing with an unplanned environmental event on at least one (1) occasion
- complying with unplanned environmental event reporting procedures
- receiving and finalising relevant work permits/approvals in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - manufacturer and supplier information of hazardous substances/dangerous goods, including safety data sheets (SDS)
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE

- application, purpose and types of work permits/approvals
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- employer and employee responsibilities
- source information on environmental issues and updates
- environmental impacts from work-related activities
- environmental terminology used in the electricity supply industry (ESI)
- workplace environmental management plan
- methods of cleaning plant, equipment and tools
- safe use of plant, vehicles, materials, tools and equipment
- types and application of PPE used for hazardous substances and dangerous goods/materials
- procedures for handling plant, tools and equipment that contain hazardous substances
- procedures for handling, controlling, storing, recycling and disposing of:
  - hazardous substances
  - waste materials
- environmentally sensitive areas, including:
  - identification of
  - working in
  - procedures for entering and exiting
- emergency procedures for spillages of hazardous substances to reduce risks to the environment, including:
  - methods of cleaning up excessive spillages
  - methods of protection to surrounding environment
  - procedures for notification of relevant personnel and authorities
  - procedures for reporting and recording incidents
- fire precautions for field work.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDREL003 Identify and apply controls for alternate supplies on the distribution network

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to identify and apply controls for alternate supplies on the distribution network in the electricity supply industry (ESI).

It includes identifying potential alternate supplies and applying control measures while performing work on or near the de-energised distribution network.

It also includes monitoring control measures for the alternate supplies to manage two-way power flow.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS018 Perform low voltage field switching operation to a given schedule

Competency Field

Entry Level

Unit Sector

Not Applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work on the distribution network	**1.1** Legislation, regulations, standards, codes of practice and workplace requirements for the work to be performed are referred to and confirmed
	1.2 Alternate supplies are identified and control measures are applied in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed and control measures identified and applied
	1.4 Work permits are organised in accordance with workplace requirements
	1.5 Tools, equipment and personal protective equipment (PPE) required for work are identified, obtained and confirmed in working order
	1.6 Worksite is prepared in accordance with workplace requirements
2 Carry out work on the distribution network	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Control measures are monitored for alternative supplies in accordance with workplace requirements
	2.4 Manual handling, the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.5 Work is carried out on the distribution network in accordance with workplace requirements
	2.6 Incidents or unplanned events are responded to in

		accordance with workplace requirements
3 Complete work and documentation	**3.1**	Work is completed and control measures removed from the worksite in accordance with workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Incidents or unplanned events are reported in accordance with workplace requirements
	3.5	Tools and equipment are cleaned, checked and returned in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit. No Equivalent Unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDREL003 Identify and apply controls for alternate supplies on the distribution network

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- identifying potential alternate supplies
- identifying control measures to manage alternate supplies
- implementing at least two (2) of the following control measures for alternate supplies:
  - isolation points, including using tags and locks in accordance with workplace requirements
  - short circuiting and earthing
  - bonding
  - low voltage (LV) short circuited
- monitoring control measures for alternate supplies to manage two-way power flow
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and workplace requirements, including:
  - WHS/OHS

- hazard, risk assessment and risk control requirements, including:
  - potential hazards, including:
    - alternating current (a.c.) and direct current (d.c.)
    - installation multiple earthed neutral (MEN) location changes in stand-alone mode
    - residual charge in electronic devices, e.g., capacitors in inverters
    - potential rise and currents on neutral
  - potential backfeed hazards from:
    - faulty equipment
    - incorrectly installed equipment
- types and application of PPE
- test equipment
- concept, application and operation of alternate supplies, including:
  - anti-islanding control and protection
  - system monitoring and load management
- identification of alternate supplies from:
  - signage
  - visual
  - registers
- alternate supplies, including:
  - photovoltaic (PV) systems
  - battery systems
- awareness of known and unknown alternate supplies, including:
  - generation sources
  - storage sources
- impacts of two-way power flow connected to the grid
- control measures for alternate supplies, including:
    - isolation points, including tags and locks, in accordance with workplace requirements
    - short circuiting and earthing
    - bonding
    - LV short circuited
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- procedures for workplace records, reports and documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate plant and equipment in the vicinity of live electrical apparatus in the electricity supply industry (ESI).

It includes operating plant and equipment safely up to the defined safe approach distance.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to operate plant and equipment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

		be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Hazards are identified, risks assessed and control measures identified and applied
	1.4	Work permits are received and signed in accordance with workplace requirements
	1.5	Plant, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6	Safe approach distances are determined and confirmed in accordance with workplace requirements
	1.7	Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.8	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.9	Worksite is prepared in accordance with the work plan and workplace requirements
	1.10	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Operate plant and equipment	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Hazard control measures are monitored in accordance with workplace requirements
	2.3	Safety observer is positioned to observe the plant or equipment in accordance with workplace requirements
	2.4	Safe approach distances are maintained when operating plant and equipment in the vicinity of live electrical apparatus
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements

	2.6	Plant and equipment are safely operated in the vicinity of live electrical apparatus in accordance with workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL12 Operate plant and equipment near live electrical conductors and apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

Modification History

Release 2. Amended Competency Field

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- confirming safe approach distances
- operating equipment while maintaining the safe approach distance
- operating plant while maintaining the safe approach distance
- determining electricity network voltages, including:
  - low voltage (LV)
  - high voltages (HV)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances

- hazard, risk assessment and risk control requirements, including potential hazards:
  - conductor movements - swing, sag or blow off
- types and application of PPE
- safe use of plant and equipment in the vicinity of live electrical apparatus
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- plant and equipment, including:
  - operating characteristics
  - terminology related to operating in the vicinity of live electrical apparatus
  - hazards and potential hazards
  - communication methods and barriers between plant/equipment operator and safety observer
- characteristics of overhead and underground electricity networks, including:
  - transmission, distribution and rail
  - layout/configuration
  - components
  - voltage levels.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for operating plant and equipment in the vicinity of live electrical apparatus
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDREL005 Work safely in the vicinity of live electrical apparatus

Modification History

Release 2. Amended Competency Field.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to work safely in the vicinity of live electrical apparatus in the electricity supply industry (ESI).

It includes working safely up to the defined personal safe approach distance in the vicinity of live electrical apparatus for ESI workers.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work safely in	**1.1** Legislation, regulations, standards, codes of practice and

the vicinity of live electrical apparatus		organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2	Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.3	Hazards are identified, risks assessed and control measures identified and applied
	1.4	Work permits are received and signed in accordance with workplace requirements
	1.5	Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.6	Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8	Worksite is prepared in accordance with the work plan and workplace requirements
2 Work safely in the vicinity of live electrical apparatus	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools and equipment are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed in the vicinity of live electrical apparatus

	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL16 Working safely near live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDREL005 Work safely in the vicinity of live electrical apparatus

Modification History

Release 2. Amended Competency Field.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- determining electricity network voltages, including:
  - low voltage (LV)
  - high voltages (HV):
    - distribution
    - sub-transmission
    - transmission
- identifying electricity network assets
- determining and confirming safe approach distances
- performing work while maintaining the personal safe approach distance
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace

requirements, including:
  - WHS/OHS
  - safe approach distances
  - emergency procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- basic electrical principles, including:
  - voltage, current and resistance
  - typical effects of current, including physiological effects and induced voltages
  - consequences of short circuits, including arc flash and touch and step potentials
- electricity networks, including:
  - LV
  - HV:
    - distribution
    - sub-transmission
    - transmission
  - earthing systems
  - associated assets
  - layouts and configuration
  - basic protection
  - relationship between an overhead and underground supply system
- terminology related to working safely in the vicinity of live electrical apparatus.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for working safely near live electrical apparatus
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Modification History

Release 2. Amended Competency Field.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to work safely in the vicinity of live electrical apparatus as a non-electrical worker.

It includes compliance with safe approach distances for the worker, plant, tools and equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Entry Level

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work safely in the vicinity of live	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

electrical apparatus		be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4	Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5	Hazards are identified, risks assessed and control measures identified and applied
	1.6	Work permits are received and signed in accordance with workplace requirements
	1.7	Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.8	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.9	Worksite is prepared in accordance with the work plan and workplace requirements
	1.10	Electricity infrastructure assets and associated voltages are identified and confirmed
	1.11	Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
2 Work safely in the vicinity of live electrical apparatus	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements

	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Work permits are signed off in accordance workplace requirements
	3.3	Works records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDREL14 Working safely near live electrical apparatus as a non-electrical worker.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Modification History

Release 2. Amended Competency Field.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- confirming and maintaining the safe approach distance, including:
  - mobile plant, tools and equipment
  - personal
- determining electricity network voltages, including:
  - low voltage (LV)
  - high voltages (HV)
- identifying electricity network assets
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS

  - safe approach distances
  - emergency procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment, including:
  - earthing of mobile plant
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- basic electrical principles, including:
  - voltage, current and resistance
  - typical effects of current, including physiological effects and induced voltages
  - consequences of short circuits, including arc flash and touch and step potentials
- electricity networks, including:
  - LV
  - HV
  - earthing systems
  - associated assets
  - asset identification
  - layouts and configuration
  - basic protection
  - relationship between an overhead and underground supply system
- terminology related to working safely in the vicinity of live electrical apparatus.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS007 Install and maintain distribution overhead conductors and cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain distribution overhead conductors and cables used on poles and structures in the electricity supply industry (ESI).

It includes stringing, tensioning, terminating and securing conductors and cables to insulators or supports and carrying out electrical connections.

It also includes the repairing or replacement of conductors and cables, testing and updating system data/maintenance records.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS012 Install and maintain poles, structures and hardware

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain overhead conductors and cables	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9 Work permits are received and signed in accordance with workplace requirements
	1.10 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.11 Worksite is prepared in accordance with the work plan and workplace requirements
	1.12 Traffic management plans are confirmed as being in place in accordance with workplace requirements
2 Carry out installation and	**2.1** Legislation, regulations, standards, codes of practice and

maintenance of overhead conductors and cables		organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Overhead conductors and cables are strung, tensioned, terminated and secured in accordance with the work plan and workplace requirements
	2.8	Overhead conductor and cable electrical connections are completed in accordance with the work plan and workplace requirements
	2.9	Repair or replacement of overhead conductors and cables is completed in accordance with the work plan and workplace requirements
	2.10	Anti-vibration devices or spreaders are installed in accordance with the work plan and workplace requirements
	2.11	Conductors and cables are tested in accordance with the work plan and workplace requirements
	2.12	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.13	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements

3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements

3.4 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.6 Work permits are signed off in accordance with workplace requirements

3.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS54 Install and maintain poles, structures and overhead conductors and cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS007 Install and maintain distribution overhead conductors and cables

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- installing at least two (2) types of overhead conductors/cables
- connecting and terminating conductors and cables in accordance with workplace requirements
- repairing overhead conductors/cables using at least two (2) of the following:
  - compression sleeves
  - splice
  - bullets
  - mid span joint
  - armour rods
- terminating conductors and cables
- connecting conductors and cables
- using at least two (2) types of height access methods
- using at least one (1) of the following types of stringing methods:
  - layout
  - pull through
  - pilot rope
- using at least three (3) of the following types of stringing equipment:
  - cable drum stands
  - cable trailers
  - ropes

    - rollers
    - sheaves
    - stockings
    - swivels
    - winches
- using at least one (1) of the following tensioning methods:
    - dynamometer
    - site board
    - beat (wave sagging)
    - theodolite
- using testing equipment in accordance with workplace requirements
- recording test results in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
    - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe work practices, including:
    - working on conductive poles
    - short circuiting/earthing de-energised low voltage (LV) and high voltage (HV) circuits
    - safe use of plant and equipment
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
    - role and responsibilities
    - communication methods
- construction manuals, tension charts/tables, system diagrams/plans and drawings
- types, sizes, properties and characteristics of overhead conductors/cables
- types of LV and HV overhead conductor/cable connections
- types of LV and HV overhead conductor/cable terminations
- causes and effects of poor electrical connections

- overhead conductor/cable clearances, including:
  - to ground
  - to LV/HV structures
  - waterways
  - carriageways
  - buildings
  - bridges
  - railways
- techniques for conductor/cable installation, including:
  - types and application of tools, equipment and hardware
  - procedures for stringing, tensioning and termination of LV and HV conductors/cables.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining distribution overhead conductors and cables
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS008 Install and maintain electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain electrical apparatus in the electricity supply industry (ESI).

It includes assembling, installing, connecting, testing and commissioning electrical apparatus.

It also includes cleaning, repairing and replacing electrical apparatus.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

and

UETDRDU013 Joint, terminate and maintain high voltage underground polymeric cable

UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

or

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain electrical apparatus	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Hazards are identified, risks assessed and control measures identified and applied
	1.7 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.8 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.9 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements

	1.10	Work permits are received and signed in accordance with workplace requirements
	1.11	Worksite is prepared in accordance with the work plan and workplace requirements
	1.12	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out installation of electrical apparatus	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant, tools and equipment are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Electrical apparatus is assembled and tested in accordance with work plan and workplace requirements
	2.8	Electrical apparatus is erected and connected in accordance with work plan and workplace requirements
	2.9	Electrical apparatus is tested and commissioned in accordance with work plan and workplace requirements
	2.10	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.11	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out maintenance of electrical apparatus	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored

	3.2 Lifting, climbing, working at heights and the use of plant, tools and equipment are carried out in accordance with workplace requirements
	3.3 Hazard control measures are monitored in accordance with workplace requirements
	3.4 Safety observer is positioned to observe the work in accordance with workplace requirements
	3.5 Communication methods between workers and safety observer are used in accordance with workplace requirements
	3.6 Safe approach distances are maintained when the work is being performed
	3.7 Problem-solving methods are used to resolve problems from measured and calculated values in accordance with workplace requirements
	3.8 Electrical apparatus faults are identified in accordance with workplace requirements
	3.9 Electrical apparatus is repaired or replaced in accordance with workplace requirements
	3.10 Electrical apparatus is tested and returned to service in accordance with workplace requirements
	3.11 Incidents or unplanned events are responded to in accordance with workplace requirements
	3.12 Quality checks of work are undertaken in accordance with work plan and workplace requirements
4 Complete work and documentation	**4.1** Completed work is checked for compliance against the work plan and workplace requirements
	4.2 Incidents or unplanned events are reported in accordance with workplace requirements
	4.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

4.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

4.6 Work permits are signed off in accordance with workplace requirements

4.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to:

- UETTDRIS41 Install network infrastructure electrical equipment
- UETTDRIS42 Maintain network infrastructure electrical equipment

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS008 Install and maintain electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- connecting and terminating conductors and cables in accordance with workplace requirements
- installing and maintaining electrical apparatus for at least one (1) of the following:
  - transformers
  - reactors
  - regulators
  - capacitors
- installing and maintaining electrical switching apparatus, including least one (1) of the following:
  - reclosers
  - motorised switch
  - gas-filled switch
  - oil-filled switch
  - air-break switch
  - vacuum switch
- installing and maintaining electrical apparatus for at least three (3) of the following:
  - fuse switches
  - sectionalisers
  - dropout fuses
  - disconnectors
  - links
  - fuses

    - surge arrestors
    - line fault indicators
- conducting at least five (5) of the following tests:
    - voltage
    - phasing
    - current
    - insulation resistance
    - neutral identification
    - polarity
    - phase rotation
    - loop impedance
    - earth resistance
- dealing with an unplanned event on at least one (1) occasion
- recording test results in accordance with workplace requirements
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
    - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant and equipment
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- construction manuals, system diagrams/plans and drawings
- characteristics of a transformer, including:
    - basic construction of distribution transformers
    - operation under load/no-load conditions
    - types and basic operation of tap changing switches
    - efficiency and cooling
- installation and maintenance of a transformer, including:
    - basic connections
    - restrictions to parallel operation
    - testing

    - fault-finding procedures
    - earthing types and configurations
- types and function of electrical apparatus, including:
    - reactors
    - regulators
    - capacitors
    - surge arrestors
    - fault indicators
- types and function of various switchgear/protection apparatus, including:
    - isolators
    - air-break
    - gas-filled
    - oil-filled
    - vacuum type
    - links
    - fuses
    - sectionalisers
    - reclosers
    - operating characteristics
    - advantages and disadvantages of different types of switchgear
    - earthing functions
- installation and maintenance procedures for electrical apparatus
- procedures for diagnosing and rectifying faults
- procedures for testing and commissioning procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Evidence should show demonstrated competency working at heights, in limited spaces, with different structural/construction types and method and in a variety of environments.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining electrical apparatus
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS010 Install and maintain low voltage overhead services

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain low voltage (LV) overhead services in the electricity supply industry (ESI).

It includes the installation, connection, repair and replacement of service cables and hardware between the customer's connection point and the network point of supply.

It also includes the identification, rectification of faults, testing and commissioning requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain LV overhead services	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Pre-climbing assessment is conducted in accordance with workplace requirements
	1.7 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.8 Worksite is prepared in accordance with work plan workplace requirements
	1.9 Traffic management plan is confirmed as being in place in accordance with workplace requirements
	1.10 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.11 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements

	1.12	Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
2 Carry out installation and maintenance of LV overhead services	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are used in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Specialised energised LV equipment to work on energised LV overhead services is used in accordance with workplace requirements
	2.8	LV overhead service and hardware are installed in accordance with the work plan and workplace requirements
	2.9	LV overhead service and hardware are maintained in accordance with the work plan and workplace requirements
	2.10	LV overhead service is tested and commissioned in accordance with the work plan and workplace requirements
	2.11	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.12	Quality checks of work are undertaken in accordance with work plan, network standards and workplace requirements
3 Complete work and	**3.1**	Completed work is checked for compliance against the

documentation		work plan, network standards in accordance with workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned up and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with network standards and workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS56 Install and maintain low voltage overhead services.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS010 Install and maintain low voltage overhead services

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational and workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - network standards
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- preparing worksite, including:
  - identifying common pole markings i.e., condemned poles
  - conducting safe to approach tests as required
  - assessing network assets for pre-climbing (poles)
  - identifying potential secondary points of contact
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- applying energised/live low voltage (LV) working requirements and procedures in accordance with workplace requirements
- stringing and connecting low voltage (LV) overhead service cables, including at least two (2) of the following:
  - three phase
  - single phase
  - two phase
- installing LV overhead service protection devices, including at least one (1) of the following:
  - service fuse
  - circuit breakers (pole)
  - service link
- using at least three (3) of the following specialised energised LV equipment:
  - insulating gloves*
  - insulating mats/sleeves/tubes*

    - tensioning devices
    - insulated tools
    - pole shrouds
    - (*must do)
- performing at least five (5) of the following LV overhead service tests:
    - neutral integrity*
    - polarity*
    - voltage
    - current
    - phase rotation
    - insulation resistance
    - neutral identification
    - loop impedance
    - earth resistance
    - (*must do)
- recording test results in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
    - WHS/OHS
    - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and specialised equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- identification and control methods of secondary points of contact
- types and application of specialised energised LV equipment, including:
    - insulating gloves
    - insulating mats/sleeves/tubes
    - tensioning devices
    - insulated tools
    - pole shrouds
- safety observer:

  - role and responsibilities
  - communication methods
- construction manuals, system diagrams/plans and drawings, including:
  - minimum clearances for overhead services to assets and structures
  - ground clearances for overhead services
  - customer poles
  - network standards
- types, characteristics and applications of service cables, including:
  - cable cross-sectional area of conductors
  - current rating and fuse types and ratings
  - maximum span lengths and tensions for overhead services
- stringing and terminating methods
- connection of overhead services, including:
  - types of overhead service connections
  - live LV work principles and procedures
  - LV distribution mains protection systems
  - purpose and function of the multiple earth neutral (MEN) system
  - causes and effects of connection faults
  - standard phase sequencing
  - purpose and operation of service fusing
- procedures for maintenance of overhead service installations, including:
  - diagnosis and rectification of faults
  - removing, repairing and replacing damaged overhead services
  - removing and replacing service protection devices
- testing and commissioning overhead services, including:
  - pre-energising tests - insulation resistance and continuity test
  - inspection
  - test equipment functionality and interpretation
  - principles of loop impedance
  - polarity, voltage and phase sequence tests
  - neutral and phase identification tests
  - neutral integrity tests
  - use of independent earth
  - recording results.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining LV overhead services
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS011 Install and maintain low voltage underground services

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain low voltage (LV) underground services in the electricity supply industry (ESI).

It includes the connection, repair and replacement of service cables and hardware between the customer's connection point and the network point of supply.

It also includes the identification and rectification of faults and testing and commissioning requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under State and Territory legislative and regulatory licensing or network operator requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Industry Specific Cross Discipline

Unit Sector

Industry Specific Cross Discipline

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain LV underground services	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
	1.8 Traffic management plan is confirmed as being in place in accordance with workplace requirements
	1.9 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.10 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
2 Carry out installation and maintenance of LV	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

underground services		be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	LV underground service and hardware are installed in accordance with the work plan and workplace requirements
	2.7	LV underground service and hardware are maintained in accordance with the work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS55 Install and maintain low voltage underground services.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS011 Install and maintain low voltage underground services

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- applying energised/live low voltage (LV) working requirements and procedures in accordance with workplace requirements
- connecting LV underground services to at least two (2) of the following:
  - underground pillar/pit connection (single phase)
  - underground pillar/pit connection (three phase)
  - underground to overhead connection
- using the following specialised energised LV equipment:
  - insulating mats/covers
  - insulating gloves
- testing of LV underground service connections, including at least four (4) of the following tests:
  - polarity*
  - neutral integrity*
  - phase rotation
  - continuity
  - voltage
  - insulation resistance
  - (* must do)
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- safety observer:
  - role and responsibilities
  - communication methods
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- requirements for the use of workplace construction manuals, system diagrams/plans and drawings, including:
  - types of LV underground services
  - methods of construction and installation
  - minimum depths for underground services to be buried and proximity to other assets and structures
- materials for underground service installation
- methods of laying underground service cables
- characteristics and applications of different types of cables
- diagnosis and repair of faults
- jointing and terminating methods in a:
  - fuse box
  - pillar and pit
  - customer installation
- testing and commissioning underground services, including:
  - pre-energising tests - insulation resistance and continuity test
  - inspection
  - test equipment functionality and interpretation
  - polarity, voltage and phase sequence tests
  - neutral and phase identification tests
  - neutral integrity tests
  - recording results
- connection principles, including:
  - energised/live work requirements and procedures
  - purpose and function of multiple earth neutral (MEN) system
  - types of connection faults

- causes and effects of incorrect and poor electrical connections
- principles of loop impedance
- reasons for and methods used to maintain standard phase sequencing
- purpose and operation of service fusing
- use of independent earth for testing.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining LV underground services
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS012 Install and maintain poles, structures and hardware

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain poles, structures and hardware in the electricity supply industry (ESI).

It includes assembling, fixing and attaching hardware, erecting, stabilising, repairing, replacing and supporting poles and structures (excluding towers).

It also includes repairing and replacing hardware.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under State and Territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain poles, structures and hardware	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
	1.9 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out installation and maintenance of poles, structures and hardware	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Hardware is assembled and fixed to the pole/structure in accordance with work plan and workplace requirements

	2.5	Poles or structures are erected and stabilised in accordance with work plan and workplace requirements
	2.6	Hardware is maintained in accordance with work plan and workplace requirements
	2.7	Poles or structures are maintained in accordance with work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements
	3.7	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector

Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS52 Install and maintain poles, structures and associated hardware.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS012 Install and maintain poles, structures and hardware

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing and maintaining at least one (1) of the following pole/structure types:
  - wood
  - steel
  - concrete
  - composite
- installing and maintaining at least three (3) of the following hardware types:
- insulators
- cross-arm braces
- cross arms
- pole steps
- shackle straps
- earth leads
- traction supports
- traction registration
- bonding
- using at least one (1) of the following pole stabilisation methods:
  - compaction
  - baulking
  - stays
  - concreting (including formwork)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace

requirements
- completing relevant work records, reports and documentation

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant and equipment
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- construction manuals, system diagrams/plans and drawings
- characteristics and applications of different types of poles/structures and hardware
- installation of poles/structures and hardware, including:
  - stays/guys
  - erection methods
  - types of installation equipment/tools
  - excavation methods
  - types of footings/foundations
  - types of attachments
  - earthing
  - bonding
  - safe methods of erecting and stabilising poles/structures and cross arms
- maintenance of poles/structures and hardware, including:
  - stays/guys
  - supporting unstable poles/structures
  - strengthening methods
  - insulators and cross arms.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining poles, structures and hardware
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS013 Install and maintain public lighting systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain public lighting systems in the electricity supply industry (ESI).

It includes installing underground and/or overhead public lighting system, poles/columns, hardware and control equipment.

It also includes testing and commissioning, inspecting and maintaining the public lighting system.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDO005 Maintain overhead energised low voltage distribution network

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain public lighting systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements

	1.10	Worksite is prepared in accordance with the work plan and workplace requirements
	1.11	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out installation and maintenance of underground public lighting systems	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights, the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Excavation/foundation construction is inspected in accordance with the work plan and workplace requirements
	2.8	Pole/column, hardware and control equipment are assembled in accordance with the work plan and workplace requirements
	2.9	Pole/column is erected and stabilised in accordance with the work plan and workplace requirements
	2.10	Earthing and public lighting circuits are installed in accordance with the work plan and workplace requirements
	2.11	Public lighting system is tested and commissioned in accordance with the work plan and workplace requirements
	2.12	Public lighting and associated hardware are inspected in accordance with workplace requirements

	2.13 Public lighting systems are maintained in accordance with the work plan and workplace requirements
	2.14 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.15 Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out installation and maintenance of overhead public lighting systems	**3.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2 Lifting, climbing, working at heights, and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	3.3 Hazard control measures are monitored in accordance with workplace requirements
	3.4 Safety observer is positioned to observe the work in accordance with workplace requirements
	3.5 Communication methods between workers and safety observer are used in accordance with workplace requirements
	3.6 Safe approach distances are maintained when the work is being performed
	3.7 Hardware, fittings and control equipment are assembled in accordance with the work plan and workplace requirements
	3.8 Public lighting is installed in accordance with the work plan and workplace requirements
	3.9 Public lighting system is tested and commissioned in accordance with the work plan and workplace requirements
	3.10 Public lighting and associated hardware are inspected in accordance with workplace requirements
	3.11 Public lighting systems are maintained in accordance with the work plan and workplace requirements
	3.12 Incidents or unplanned events are responded to in accordance with workplace requirements

	3.13	Quality checks of work are undertaken in accordance with work plan and workplace requirements
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS53 Install and maintain power system public lighting.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS013 Install and maintain public lighting systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- installing and maintaining public lighting poles/columns
- installing and maintaining public lighting hardware, including any three (3) of the following:
  - luminaires
  - photoelectric cells
  - lamps
  - fuses
  - control components
  - brackets
- conducting at least five (5) of the following tests:
  - voltage
  - current
  - insulation resistance
  - neutral identification
  - polarity
  - loop impedance
  - earth resistance
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - inspection, testing and commissioning of public lighting systems
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- construction manuals, system diagrams/plans and drawings for public lighting
- basic public lighting principles
- types, function and operation of lanterns/luminaires/lamps
- types, function and operation of control equipment
- types and function of poles/columns
- types and function of hardware used for public lighting
- overhead and underground public lighting systems
- controlling and switching of public lighting systems
- methods for the installation of public lighting systems
- maintenance of public lighting systems, including:
  - fault types and causes
  - cleaning
  - removing, repairing and replacing hardware.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining public lighting systems
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS014 Install and replace energy meters and associated equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and replace energy meters and associated equipment in the electricity supply industry (ESI).

It includes installing, replacing, testing and commissioning of whole current energy meters and associated equipment in accordance with workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install or replace energy meters and associated equipment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Carry out the installation of new energy meters and associated equipment	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Installation of energy meters and associated equipment is performed in accordance with the work plan and workplace requirements
	2.5 Energy meter is energised and tested in accordance with workplace requirements
	2.6 Incidents or unplanned events are responded to in accordance with workplace requirements

	2.7	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out the replacement of energy meters and associated equipment	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Lifting and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Energy meter is read, isolated and tested to prove de-energised in accordance with workplace requirements
	3.5	Replacement of energy meters and associated equipment is performed in accordance with the work plan and workplace requirements
	3.6	Energy meter is energised and tested in accordance with workplace requirements
	3.7	Incidents or unplanned events are responded to in accordance with workplace requirements
	3.8	Quality checks of work are undertaken in accordance with work plan and workplace requirements
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is cleaned and made safe in accordance with workplace requirements
	4.4	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS60 Install and replace power system energy meters and associated equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS014 Install and replace energy meters and associated equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing whole current energy meters
- reading, testing and replacing whole current energy meters
- installing associated metering equipment
- replacing associated metering equipment
- energising and testing of whole current energy meters and associated equipment
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - energy meters and associated equipment
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- construction, operation and selection of whole current energy meters

- construction, operation and selection of associated metering equipment
- metering arrangements, including direct, distributed master, multiple master, plug-in and multiple earth neutral (MEN) system
- cable types and applications
- installation and replacement of energy meters, including:
  - stripping cable
  - cable terminations
  - meter wiring positions
  - service protection device (SPD)
  - meter boards
- testing procedures, including:
  - voltage
  - continuity
  - insulation resistance
  - polarity
  - phase sequence
  - neutral integrity
  - meter functionality
- procedures for recording energy meter documentation
- techniques for the maintenance of energy metering, including fault finding, fault rectification, meter reading and tariff changes.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and replacing energy meters and associated equipment
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS015 Install low voltage mobile generator

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install a low voltage (LV) mobile generator in the electricity supply industry (ESI).

It includes selecting, connecting, synchronising, operating and disconnecting of a temporary mobile generator to LV network assets to maintain supply.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install LV mobile generator	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
	1.8 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out the installation of LV mobile generator	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 LV mobile generator is installed in accordance with the work plan and workplace requirements
	2.5 LV mobile generator is synchronised to LV network in accordance with the work plan and workplace

		requirements
	2.6	LV mobile generator is monitored in accordance with the work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.3	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.4	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS61 Install mobile generation set for synchronised LV Genset.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS015 Install low voltage mobile generator

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- operating a generator
- connecting a generator
- disconnecting a generator
- synchronising of generator onto the low voltage (LV) network without interruption to supply
- synchronising of generator off the LV network without interruption to supply
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- safety precautions specific to installing mobile generators
- techniques in the connecting, operating and disconnecting of generators, including:
  - synchronising of generator control systems onto and off the network without interruption to supply

  - estimation of LV load
  - assessing the appropriateness of the generator
  - multiple generators
- connections to the network, including:
  - overhead
  - indoor substations
  - customer installations
  - kiosk substations.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing LV mobile generators
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS017 Perform high voltage field switching operation to a given schedule

Modification History

Release 3. Unit application 'qualification' spelling corrected and numeral '(2)' added in Performance Evidence for clarification.

Release 2. Unit application updated for clarification.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform high voltage (HV) field switching operation to a given schedule in the electricity supply industry (ESI).

It includes the approval process, isolating, paralleling and restoring HV overhead and underground electricity networks using circuit breaking and isolating equipment, specialised tools, personal protective equipment (PPE) and testing equipment.

It also includes proving de-energised, short circuiting and earthing, preparing, issuing and cancelling work permits.

Note: *Those holding an existing Certificate III ESI Distribution Overhead, Distribution Underground qualification or equivalent meets the prerequisite unit requirements.*

Those holding an existing Diploma / Advanced Diploma of ESI Power Systems or Certificate III Electrotechnology Electrician qualification or equivalent partially meets the prerequisite unit requirements. They are still required to complete:

- *UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus*
- *UETDREL005 Work safely in the vicinity of live electrical apparatus*
- *UETDRIS018 Perform low voltage field switching operation to a given schedule*

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS018 Perform low voltage field switching operation to a given schedule

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for HV field switching	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Switching schedule is obtained and confirmed in accordance with workplace requirements
	1.3 Plant, tools, equipment and PPE required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with switching schedule and workplace requirements
	1.6 Work permit/approval is organised in accordance with workplace requirements
	1.7 Worksite is prepared in accordance with workplace requirements

2 Carry out HV field switching	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Communication with switching controller is established and maintained during switching in accordance with workplace requirements
	2.5 Approval is obtained to commence HV field switching in accordance with switching schedule and workplace requirements
	2.6 HV field switching is performed in accordance with the switching schedule and workplace requirements
	2.7 Work permit is written and issued in accordance with the switching schedule and workplace requirements
	2.8 Work permit is cancelled or relinquished in accordance with workplace requirements
	2.9 Approval is obtained to commence restoration of HV supply in accordance with switching schedule and workplace requirements
	2.10 HV field switching is performed to restore network to normal in accordance with the switching schedule and workplace requirements
	2.11 Switching controller is notified HV restoration has been completed in accordance with switching schedule and workplace requirements
	2.12 Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1** Incidents or unplanned events are reported in accordance with workplace requirements
	3.2 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements

3.3 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.4 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS44 Perform HV field switching operation to a given schedule.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS017 Perform high voltage field switching operation to a given schedule

Modification History

Release 3. Unit application 'qualification' spelling corrected and numeral '(2)' added in Performance Evidence for clarification.

Release 2. Unit application updated for clarification.

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- verifying switching scheduling documents
- establishing and maintaining communications with the following:
  - switching controller
  - permit holders
  - other network stakeholders
- obtaining approval to perform high voltage (HV) field switching to a given schedule
- performing HV field switching operation to a given schedule completing at least two (2) of the following:
  - isolation
  - restoration
  - paralleling
- performing at least two (2) of the following tests:
  - proved de-energised*
  - voltage
  - phasing
  - (*must do)
- operating at least four (4) of the following HV electrical apparatus:
  - HV links/isolators/disconnectors

  - air-break switches
  - fuses
  - ring main switch
  - earth switches
  - reclosers
  - circuit breakers
  - sectionalisers
  - live line clamps
  - load break elbows
- using at least two (2) of the following specialist tools and equipment:
  - HV phasing sticks
  - HV ground mounted equipment isolating handles
  - HV operating sticks
  - HV earths
- using tags and locks
- organising, issuing, cancelling or relinquishing relevant work permits/approvals in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- types, characteristics and capabilities of specialised tools and testing equipment, including:
  - insulated equipment
- purpose, layout and application of switching schedules
- HV field switching principles and procedures, including:
  - roles and responsibilities
  - procedures for coordination of operations
  - isolation, restoration and paralleling

  - proving de-energised
  - earthing
  - pre- and post-switching checks
  - fault finding
  - alternate sources of supply and possible back-feed
  - primary causes, effects and types of HV electrical faults
  - emergency fault procedures
  - operation of HV switchgear
  - HV feeder auto-reclosing suppression
- distribution protection systems, including:
  - types, operation and applications
  - protection equipment
- HV switchgear, including:
  - types and categories (including live line clamps)
  - application, function and operating capabilities
- application and function of the single wire earth return (SWER) system components, including:
  - circuit arrangement
  - principle of operation
  - hazards and procedures associated with faulty SWER earth systems
  - procedure to isolate, energise and commission SWER transformer
- operation of HV distribution transformers, including:
  - principles governing factors for transformer ratings
  - operating limitations and the relationship between transformer and HV fuse rating
  - purpose and principle operation of HV distribution transformer tap changers
  - paralleling requirements
- functions of supervisory control and data acquisition (SCADA) (or any other relevant data acquisition and control) systems and its main components
- function of the main components of a local/remote control system.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for perform HV field switching operations to a given schedule
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS018 Perform low voltage field switching operation to a given schedule

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform low voltage (LV) field switching operation to a given schedule in the electricity supply industry (ESI).

It includes isolating, paralleling and restoring LV overhead and underground electricity networks using circuit breaking and isolating equipment.

It also includes the approval process, using specialist tools, personal protective equipment (PPE), testing, short circuiting for switching and preparing, issuing and cancelling work permits.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for LV field switching	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Switching schedule is obtained and confirmed in accordance with workplace requirements
	1.3 Plant, tools, equipment and PPE required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with switching schedule and workplace requirements
	1.6 Work permit/approval is organised in accordance with workplace requirements
	1.7 Worksite is prepared in accordance with workplace requirements
2 Carry out LV field switching	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Communication with switching controller is established and maintained during switching in accordance with workplace requirements

	2.5 Approval is obtained to commence LV field switching in accordance with switching schedule and workplace requirements
	2.6 LV field switching is performed to isolate supply in accordance with the switching schedule and workplace requirements
	2.7 Work permit is written and issued in accordance with the switching schedule and workplace requirements
	2.8 Work permit is cancelled or relinquished in accordance with workplace requirements
	2.9 Approval is obtained to commence restoration of LV supply in accordance with switching schedule and workplace requirements
	2.10 LV field switching is performed to restore supply in accordance with the switching schedule and workplace requirements
	2.11 Switching controller is notified LV restoration has been completed in accordance with switching schedule and workplace requirements
	2.12 Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1** Incidents or unplanned events are reported in accordance with workplace requirements
	3.2 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.3 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.4 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS43 Perform low voltage field switching operation to a given schedule.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS018 Perform low voltage field switching operation to a given schedule

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- verifying switching scheduling documents
- establishing and maintaining communications with the following:
  - switching controller
  - permit holders
  - other network stakeholders
- obtaining approval to perform low voltage (LV) field switching to a given schedule
- performing LV field switching operation to a given schedule completing at least two (2) of the following:
  - isolation
  - restoration
  - paralleling
- performing at least two (2) of the following tests:
  - proved de-energised*
  - voltage
  - current
  - phasing
  - (*must do)
- operating at least two (2) of the following:
  - LV links
  - LV fuses
  - LV circuit breakers
- using at least one (1) of the following:

  - short circuiting equipment
  - operating sticks
- using tags and locks
- organising, issuing, cancelling or relinquishing relevant work permits/approvals in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- types, characteristics and capabilities of specialised tools and testing equipment
- purpose, layout and application of switching schedules
- LV field switching principles and procedures, including:
  - roles and responsibilities
  - procedures for coordination of operations
  - isolation, restoration and paralleling
  - proving de-energised
  - short circuiting
  - pre- and post-switching checks
  - fault finding
  - alternate sources of supply and possible back-feed
  - emergency fault procedures
- electrical operating/LV network diagrams and characteristics
- communication procedures
- danger tag and lockout procedures
- types, characteristics and capabilities of electrical apparatus used as a LV isolation points.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for performing low voltage field switching operation to a given schedule
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS020 Contribute to coordinated high voltage live work

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to contribute to coordinated high voltage (HV) live work in the electricity supply industry (ESI).

It includes pre-work briefing on tasks to be undertaken, roles of individual team members, identification of possible hazards, risk management analysis and implementation of control measures to control or mitigate the risk to acceptable levels.

It also includes monitoring work performance to ensure safety, and post-work debriefing to identify areas for improvement.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1	**Prepare to contribute to coordinated HV live work**	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
		1.2 Pre-work briefing is conducted in accordance with workplace requirements
		1.3 Work plan is determined, confirmed and communicated with relevant personnel in accordance with workplace requirements
		1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
		1.5 Hazards are identified, risks assessed, and control measures identified and applied
		1.6 Work permits are determined in accordance with workplace requirements
		1.7 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
		1.8 Work roles and tasks are allocated according to individual competencies and workplace requirements
		1.9 Worksite is prepared in accordance with the work plan and workplace requirements
2	**Contribute to coordinated HV live work**	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
		2.2 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
		2.3 Work permits are received and signed in accordance with workplace requirements
		2.4 HV live work is contributed to in accordance with workplace requirements
		2.5 Hazard control measures are monitored in accordance with workplace requirements
		2.6 Incidents or unplanned events are responded to in

		accordance with workplace requirements
	2.7	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Post-work briefing is conducted in accordance with workplace requirements
	3.3	Incidents or unplanned events are reported in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work permits are signed off in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRIS65 Contribute to coordinated HV live working.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS020 Contribute to coordinated high voltage live work

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- determining the purpose for high voltage (HV) live work
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- facilitating communication/consultation processes in a HV live line work team environment
- contributing to pre-work briefings and securing of live line permits or authority to work in a HV live line work team environment
- implementing WHS/OHS policies and procedures in a HV live line work team environment
- contributing to the work schedule in a HV live line work team environment
- contributing to post-work briefings on improving safe working in a HV live line work team environment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident

- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- specialist equipment used in HV live line work
- principles and procedures of HV live line work, including:
  - risks and hazards specific to HV live line work
  - WHS/OHS requirements specific to live line work
  - determining the purpose for HV live work
  - coordination and planning of work
  - techniques in effective communication
  - techniques in effective teamwork.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS021 Coordinate and direct switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to coordinate and direct switching programs in the electricity supply industry (ESI).

It includes the coordination and direction of switching high voltage (HV) and low voltage (LV) network circuits.

It also includes coordinating switching between operating authorities and customers.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent*

and

- *hold a UET Certificate III Qualification or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter qualification or the equivalent issued in an Australian state or territory.*

In addition, Electricians or Electrical Fitters must have completed the unit UETDRIS032 Solve problems in network equipment, or equivalent to meet the requirements for working in the electricity supply industry (ESI).

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to coordinate and direct switching programs	**1.1** Purpose for the switching program is established in accordance with workplace requirements
	1.2 Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.3 Data is analysed for best outcomes in accordance with workplace requirements
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work plan is developed, validated and communicated with stakeholders in accordance with workplace requirements
	1.6 Work permits are determined in accordance with workplace requirements
	1.7 Operational personnel requirements are determined in accordance with workplace requirements
2 Coordinate and direct switching programs	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Personnel are confirmed and coordinated in accordance with workplace requirements
	2.3 Switching programs are coordinated and directed in accordance with workplace requirements

	2.4	Work permits are received and signed in accordance with workplace requirements
	2.5	Hazard control measures are monitored in accordance with workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Work permits are signed off in accordance with workplace requirements
	3.4	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRIS001 Coordinate and direct power system switching schedules.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS021 Coordinate and direct switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- demonstrating switching coordination and direction on at least one (1) occasion.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation maintenance
- operational personnel requirements
- switching programs
- interconnected electrical networks
- functions of supervisory control and data acquisition (SCADA) or equivalent system
- electrical network switching principles, including:
  - responding to alarms, indicators and trouble calls
  - switching operator authorisation

  - manuals, system diagrams, plans and drawings
  - types, characteristics and capabilities of electrical apparatus
  - sources of possible back-feed
  - restrictions on electrical apparatus
  - isolation procedures
  - earthing procedures
  - fault levels and settings
  - load calculation
  - operating agreements
  - protection system principles
- principles of:
  - HV single wire earth return (SWER) system
  - harmonics
  - resonant networks
  - feeder automation systems.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS022 Coordinate permit procedures

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to coordinate permit procedures in the electricity supply industry (ESI).

It includes coordinating access authority procedures, collating and confirming worksite data, and operating agreements.

It also includes functions of electrical network switching and protection system principles, and fundamentals of supervisory control and data acquisition (SCADA) or equivalent systems.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold a UET Certificate III Qualification or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter qualification or the equivalent issued in an Australian state or territory.*

In addition, Electricians or Electrical Fitters must have completed the unit UETDRIS032 Solve problems in network equipment or equivalent to meet the requirements of working within the electricity supply industry (ESI).

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to coordinate permit procedures	**1.1** Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.2 Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.3 Stakeholders are provided with possible solutions and options within the scope, budget and workplace requirements
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Hazards are identified, risks assessed, and control measures identified and applied
	1.6 Work permits are determined in accordance with workplace requirements
2 Coordinate permit procedures	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Hazard control measures are monitored in accordance with workplace requirements
	2.3 Permit procedures are coordinated in accordance with workplace requirements
	2.4 Incidents or unplanned events are responded to in

		accordance with workplace requirements
	2.5	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRIS002 Coordinate power system permit procedures

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS022 Coordinate permit procedures

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation
- developing a permit schedule, including all of the following:
  - facilitating and coordinating permits
  - issuing and cancelling of permits
  - auditing procedures
  - stakeholder communication
  - operating agreements
- collating and confirming worksite data on at least one (1) occasion, including all of the following:
  - electrical network diagrams and configurations
  - safe working area
  - risk and hazard identification and control.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- safe use of plant, tools and equipment

- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- functions of supervisory control and data acquisition (SCADA) or equivalent system
- principles of high voltage (HV) single wire earth return (SWER) system
- coordination of access authority procedures, including:
  - application, purpose and types of permits
  - enterprise specific procedures
  - processes of consultation and negotiation
  - responsibilities of team members
  - efficient use of resources
  - facilitating and coordinating permits
  - issuing and cancelling of permits
  - auditing procedures
  - stakeholder communication
- procedures for collating and confirming worksite data, including:
  - electrical network diagrams and configurations
  - safe working area
  - risk and hazard identification and control
  - operating agreements
- electrical network switching principles, including:
  - manuals, system diagrams, plans and drawings
  - types, characteristics and capabilities of electrical apparatus
  - sources of possible back-feed
  - restrictions on electrical apparatus
  - isolation procedures
  - earthing procedures
  - fault levels and settings
  - load calculation
  - operating agreements
  - protection system principles.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS023 Develop and validate high voltage distribution switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to develop and validate high voltage (HV) switching programs in the electricity supply industry (ESI).

It includes HV switching principles, interconnected and radial switching programs, and types, characteristics and capabilities of electrical apparatus.

It also includes procedures for confirming, reviewing, and updating workplans, based on technical advice and data analysis, procedures for determining work permits, and writing HV switching programs for power outages.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent*

and

- *hold a UET Certificate III Qualification or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter qualification or the equivalent issued in an Australian state or territory.*

In addition, Electricians or Electrical Fitters must have completed the unit UETDRIS032 Solve problems in network equipment or equivalent to meet the requirements of working within the electricity supply industry (ESI).

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to develop and validate HV distribution switching programs	**1.1** Purpose for the HV switching program is determined in accordance with the work plan, schedules and workplace requirements
	1.2 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work plan is developed, validated and communicated with stakeholders in accordance with workplace requirements
	1.5 Operational personnel and equipment required for work are determined in accordance with work plan and workplace requirements
	1.6 Work permits are determined in accordance with workplace requirements
2 Develop and validate HV distribution switching programs	**2.1** HV switching programs are developed and validated in accordance with workplace requirements
	2.2 Work plan is checked for compliance against technical advice, legislation, regulations, standards and codes of

		practice
	2.3	Health and safety risks are identified and minimised or eliminated by using safety and control measures
	2.4	HV switching programs are verified and approved in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRIS003 Develop high voltage switching schedule.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS023 Develop and validate high voltage distribution switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- establishing the purpose of the high voltage (HV) switching program
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- confirming, reviewing, and updating workplan, based on technical advice, site inspection, and data analysis
- prioritising and sequencing work
- checking completed work for compliance against the work plan and workplace requirements
- completing relevant work records, reports and documentation
- using available data and resources to determine best outcomes
- using and interpreting single line diagrams (SLD)
- identifying work permit requirements
- developing a radial switching program including verification and approvals for one (1) of the following:
  - HV transformer
  - HV switchgear
  - HV lines and feeders
- developing an interconnected switching program including verification and approvals for one (1) of the following:
  - HV transformer
  - HV switchgear
  - HV lines and feeders
- completing all of the following checks when writing an HV switching program:
  - load management
  - voltage management
  - network component ratings

- standby generation
- paralleling
- induced back-feed
- uninterruptible power supply (UPS)
- implementing earthing procedures
- switching impact on customers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- purpose of the HV switching program
- data analysis
- hazard, risk assessment and risk control requirements, including potential hazards
- compliance with legislation, regulations, standards, codes of practice, workplan, and workplace requirements
- prioritisation and sequencing of work for completion
- operational personnel requirements
- application, purpose and types of permits
- work records, reports and documentation
- writing switching programs
- interconnected HV electrical networks
- fundamentals of HV single wire earth return (SWER) system
- HV switching principles, including:
  - switching operator responsibilities
  - manuals, system diagrams, plans and drawings
  - types, characteristics and capabilities of electrical apparatus
  - types, characteristics and capabilities of specialised tools and testing equipment
  - sources of possible back-feed
  - restrictions on electrical apparatus
  - isolation procedures
  - earthing procedures
  - fault levels and settings
  - load calculation
  - operating agreements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS024 Develop and validate low voltage distribution switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to develop and validate low voltage (LV) distribution switching programs in the electricity supply industry (ESI).

It includes low voltage (LV) switching principles, interconnected and radial switching programs, and types, characteristics and capabilities of electrical apparatus.

It also includes procedures for confirming, reviewing, and updating workplans, based on technical advice and data analysis, procedures for determining work permits, and writing LV switching programs for power outages.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent*

and

- *hold a UET Certificate III Qualification or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter qualification or the equivalent issued in an Australian state or territory.*

In addition, Electricians or Electrical Fitters must have completed the unit UETDRIS032 Solve problems in network equipment or equivalent to meet the requirements for working in the electricity supply industry (ESI).

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to develop LV distribution switching programs	**1.1** Purpose for the LV switching program is determined in accordance with the work plan, schedules and workplace requirements
	1.2 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work plan is developed, validated and communicated with stakeholders in accordance with workplace requirements
	1.5 Operational personnel and equipment required for work are determined in accordance with work plan and workplace requirements
	1.6 Work permits are determined in accordance with workplace requirements
2 Develop LV distribution switching programs	**2.1** LV distribution switching programs are developed in accordance with workplace requirements
	2.2 Work plan is checked for compliance against technical advice, legislation, regulations, standards and codes of practice

	2.3	Health and safety risks are identified and minimised or eliminated by using safety and control measures
	2.4	LV distribution switching programs are verified and approved in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRIS004 Develop low voltage switching schedule.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS024 Develop and validate low voltage distribution switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- establishing the purpose of the low voltage (LV) switching program
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- confirming, reviewing, and updating workplan, based on technical advice, site inspection, and data analysis
- determining personnel and equipment required for the work
- prioritising and sequencing work
- checking completed work for compliance against the work plan and workplace requirements
- completing relevant work records, reports and documentation
- using available data and resources to determine best outcomes
- using and interpreting single line diagrams (SLD)
- identifying work permit requirements
- identifying high voltage (HV) protection impacted by LV normally open point
- developing a radial switching program including verification and approvals for one (1) of the following:
  - HV/LV transformer
  - LV switchgear
  - LV lines and HV feeders
- developing an interconnected switching program including verification and approvals for one (1) of the following:
  - HV/LV transformer
  - LV switchgear
  - LV lines and HV feeders
- completing all of the following checks when writing an LV switching program:
  - load management

- voltage management
- network component ratings
- standby generation
- paralleling
- induced back-feed
- uninterruptible power supply (UPS)
- implementing earthing procedures
- switching impact on customers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- purpose of the LV switching program
- data analysis
- hazard, risk assessment and risk control requirements, including potential hazards
- compliance with legislation, regulations, standards, codes of practice, workplan, and workplace requirements
- prioritisation and sequencing of work for completion
- operational personnel requirements
- application, purpose and types of permits
- work records, reports and documentation
- writing switching programs
- interconnected LV electrical networks
- principles of HV single wire earth return (SWER) system
- LV switching principles, including:
  - switching operator responsibilities
  - manuals, system diagrams, plans and drawings
  - types, characteristics and capabilities of electrical apparatus
  - types, characteristics and capabilities of specialised tools and testing equipment
  - sources of possible back-feed
  - restrictions on electrical apparatus
  - isolation procedures
  - earthing/shorting procedures
  - fault levels and settings
  - load calculation
  - operating agreements
  - fundamentals of single/split phase LV
  - HV protection impacted by LV normally open point.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS025 Diagnose and resolve faults in distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to diagnose and resolve faults in distribution systems in the electricity supply industry (ESI).

It includes interpreting diagrams and technical data, applying knowledge of energy supply and reticulation systems to logical fault-finding processes, and implementing fault rectification.

It also includes safe working practices, safety and functional testing, and reporting work activities and outcomes.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS026 Diagnose and resolve faults in electrical apparatus

UETDRIS032 Solve problems in network equipment

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to diagnose and resolve faults in distribution systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work permits are determined in accordance with workplace requirements
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
2 Diagnose and resolve faults in distribution systems	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Work permits are received and signed in accordance with workplace requirements
	2.4 Faults in distribution systems are diagnosed and resolved in accordance with workplace requirements
	2.5 Hazard control measures are monitored in accordance

		with workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.7	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.4	Work permits are signed off in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRIS70 Diagnose and rectify faults in electrical energy distribution systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS025 Diagnose and resolve faults in distribution systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- diagnosing and resolving faults in distribution systems, including:
  - applying logical diagnostic methods
  - using fault scenarios to test the cause of system faults
  - identifying faults and competency needed to resolve them
  - resolving faults in system controls
  - verifying that the system operates within parameters
  - documenting fault rectification.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident

- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- control of high voltage (HV) and low voltage (LV), including:
  - voltage control devices
  - conditions leading to voltage collapse and system black
  - voltage regulators applied to generators and synchronous phase modifiers
  - electromagnetic voltage regulators
  - series and parallel capacitors
  - on-load tap changer (OLTC) transformers
  - static VAR compensations (SVCs)
- range of devices covered by SVCs, including:
  - saturated reactor (SR) compensator
  - thyristor controlled reactor (TCR) compensator
  - combined TCR/TSC (thyristor switched capacitor)
  - production of waveform distorting harmonics and control devices
- importance of the location in the system of voltage control devices
- types of communication systems including:
  - telephone, power line carrier, dedicated cable, micro-wave links and fibre optics
  - quantities and signals to be communicated
  - advantages and disadvantages of various systems
  - equipment requirements
- transient over-voltages in power systems, including:
  - switching and lightning over-voltages and their effect on different plant items
  - transient over-voltage control and reduction using surge diverters, shield wires and circuit breaker control
  - insulation systems, insulation coordination, insulation grading in plant items, bushings and capacitor bushings
- operating parameters of circuit breakers and switches, including:
  - principles of operation
  - voltage and current range
  - breaking capacity
- types of isolators
- principles of circuit breaker auxiliary systems
- impact of natural disasters
- faults related to deteriorating equipment.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS026 Diagnose and resolve faults in electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to diagnose and rectify faults in electrical apparatus in the electricity supply industry (ESI).

It includes interpreting diagrams and technical data, applying knowledge of electrical apparatus to logical fault-finding processes, and implementing fault rectification.

It also includes safe working practices, safety and functional testing, and reporting work activities and outcomes.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS032 Solve problems in network equipment

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to diagnose and resolve faults in electrical apparatus	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work permits are determined in accordance with workplace requirements
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
2 Diagnose and resolve faults in electrical apparatus	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Work permits are received and signed in accordance with workplace requirements
	2.4 Faults in electrical apparatus are diagnosed and resolved in accordance with workplace requirements
	2.5 Hazard control measures are monitored in accordance with workplace requirements

	2.6 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.7 Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements
	3.3 Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.4 Work permits are signed off in accordance with workplace requirements
	3.5 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRIS69 Diagnose and rectify faults in energy supply apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS026 Diagnose and resolve faults in electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- diagnosing and resolving faults in electrical apparatus, including:
  - applying logical diagnostic methods
  - using fault scenarios to test the cause of system faults
  - identifying faults and competency needed to resolve them
  - resolving faults in system controls
  - verifying that the system operates correctly
  - documenting fault rectification.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits

- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- control of high voltage (HV) and low voltage (LV), including:
  - voltage control devices
  - conditions leading to voltage collapse and system disintegration
  - voltage regulators applied to generators and synchronous phase modifiers
  - electromagnetic voltage regulators
  - series and parallel capacitors
  - on-load tap changer (OLTC) transformers
  - static var compensations (SVCs)
- range of devices covered by SVCs, including:
  - saturated reactor (SR) compensators
  - thyristor controlled reactor (TCR) compensators
  - combined TCR/thyristor-switched capacitor (TSC)
  - production of wave-form distorting harmonics and control devices
- importance of the location in the system of voltage control devices
- the use of graphical methods to calculate the size of var regulating plant
- control of power, including:
  - base load and spinning reserve
  - regulating machines
  - rapid start plant
  - phase shifting transformers and load shedding
  - principles and practices of automated control of individual machines
  - stations and transmission/tie-line elements
  - synchronising power
- the relationship between power and frequency, including:
  - limiting values
  - machine stabilising
  - steam by-pass, rapid valving, slip stabilisers and over-speed limiting
  - use of single pole generator circuit breakers (CB)
  - use of automatic voltage regulators (AVR) as angular stabilisers
  - damped and un-damped system oscillations
  - relationship between fault clearance times and system stability
  - calculation of critical clearance angles based on equal area criteria
- types of communication systems, including:
  - telephone, power line carrier, dedicated cable, microwave links and fibre optics
  - quantities and signals to be communicated
  - advantages and disadvantages of the various systems
  - equipment requirements

- transient over-voltages in power systems, including:
  - switching and lightning over-voltages and their effect on different plant items
  - transient over-voltage control and reduction using surge diverters, shield wires and CB control
  - insulation systems, insulation coordination, insulation grading in plant items, bushings and capacitor bushings
- factors leading to the generation of corona, including consequences, reduction, conductor bundling, grading rings and conductor surface treatment
- power system protection, including:
  - location of current transformer (CT) in major plant items
  - earthing principles and devices
  - fault current control/limitation using neutral earthing compensators (NEC), neutral point earth impedances, high conductivity shield wires and parallel feed interlocking
  - application of different types of protection.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS027 Diagnose and resolve faults in transmission systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to diagnose and resolve faults in transmission systems in the electricity supply industry (ESI).

It includes interpreting diagrams and technical data, applying knowledge of energy supply and transmission systems to logical fault-finding and resolution.

It also includes transmission primary, secondary and communication systems, functional testing, and reporting work activities and outcomes.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS026 Diagnose and resolve faults in electrical apparatus

UETDRIS032 Solve problems in network equipment

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to diagnose and resolve faults in transmission systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is developed and confirmed, permissions obtained, and these are communicated with relevant personnel in accordance with workplace requirements
	1.3 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work permits are determined in accordance with workplace requirements
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
2 Diagnose and resolve faults in transmission systems	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Work permits are received and signed in accordance with workplace requirements
	2.4 Faults in transmission systems are diagnosed and

		resolved in accordance with workplace requirements
	2.5	Hazard control measures are monitored in accordance with workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.4	Work permits are signed off in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRIS71 Diagnose and rectify faults in electrical energy supply transmission systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS027 Diagnose and resolve faults in transmission systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- diagnosing and resolving faults in transmission primary and secondary systems, including:
  - interpreting system alarms and protection operations
  - applying logical diagnostic methods
  - using fault scenarios to test the source of system faults
  - recording information from control room and relevant personnel
  - identifying faults and assigning personnel in accordance with individual skills and competencies
  - considering the impact of outages on the network
  - resolving system faults
  - verifying that the system operates within parameters
  - documenting fault rectification.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements

- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- manuals, diagrams and drawings
- overview of distribution networks
- overview of transmission primary system, including:
  - lines
  - buses
  - transformers
  - converters
  - cables
  - circuit breaker configurations
- operating parameters of circuit breakers and switches, including:
  - principles of operation
  - voltage and current range
  - breaking capacity
- protection schemes
- nomenclature and nameplates
- high pressure air systems, and air storage and handling processes
- direct current (d.c.) auxiliary systems
- SF6 conditioning, storage and handling system
- spring charging mechanisms
- generation types and fundamentals of operation
- generator connection to transmission and distribution networks.
- principles of high voltage (HV) alternating current (a.c.) and d.c. transmission, including:
  - tower types and configurations
  - insulator types
  - types of conductors
  - line ratings
  - conductor terminations
  - harmonic filters
  - protection
- types of isolators
- control of voltage
- voltage collapse and system black, including:
  - under frequency trip
  - automatic load shedding

    - manual load shedding
- voltage control devices, including:
    - voltage regulators applied to generators and synchronous phase modifiers
    - electromagnetic voltage regulators
    - series and parallel capacitors
    - on-load tap changer (OLTC) transformers
    - static var compensation (SVC)
- overview of transmission secondary systems, including:
    - control and supervisory systems
    - protection schemes
- overview of the transmission communication systems, including:
    - telephone
    - power line carrier
    - dedicated cable
    - micro-wave links
    - fibre optics
- transient voltage levels in power systems, including:
    - switching
    - lightning
    - surge diverters
    - shield wires
    - insulation grading
    - corona discharge
- impact of natural disasters
- faults related to deteriorating components.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS028 Implement and monitor environmental policies and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to implement and monitor environmental policies and procedures in the electricity supply industry (ESI).

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to implement and monitor environmental policies and procedures	**1.1** Environmental legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed

	1.2	Environmental policies and procedures are obtained
2 Implement and monitor environmental policies and procedures	**2.1**	Environmental policies and procedures are implemented in accordance with workplace requirements
	2.2	Environmental policies and procedures are monitored in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Environmental policies and procedures are reviewed in accordance with workplace requirements
	3.2	Effectiveness of environmental policies and procedures is communicated in accordance with workplace requirements
	3.3	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRIS005 Implement & monitor power system environmental & sustainable energy management policies & procedures.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS028 Implement and monitor environmental policies and procedures

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- obtaining environmental policies and procedures
- implementing environmental policies and procedures
- monitoring environmental policies and procedures
- completing relevant work records, reports, documentation and communication.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- environmental policies and procedures
- implementation and monitoring of environmental policies and procedures
- work records, reports, documentation and communication
- effective verbal and written communication techniques.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS029 Implement and monitor organisational WHS/OHS policies, procedures and programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to implement and monitor organisational workplace health and safety/occupational health and safety (WHS/OHS) policies, procedures and programs in the electricity supply industry (ESI).

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to implement and monitor organisational WHS/OHS policies, procedures and programs	**1.1** WHS/OHS legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed

	1.2	Organisational WHS/OHS policies and procedures are obtained
2 Implement and monitor organisational WHS/OHS policies, procedures and programs	**2.1**	Organisational WHS/OHS policies and procedures are implemented in accordance with workplace requirements
	2.2	Organisational WHS/OHS policies and procedures are monitored in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Organisational WHS/OHS policies and procedures are reviewed in accordance with workplace requirements
	3.2	Effectiveness of organisational WHS/OHS policies and procedures are communicated in accordance with workplace requirements
	3.3	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRIS006 Implement and monitor the power system organisational WHS/OHS policies, procedures and programs

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS029 Implement and monitor organisational WHS/OHS policies, procedures and programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- obtaining organisational workplace health and safety (WHS)/occupational health and safety (OHS) policies and procedures
- implementing organisational WHS/OHS policies and procedures
- monitoring organisational WHS/OHS policies and procedures
- completing relevant work records, reports, documentation and communication.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- organisational WHS/OHS policies and procedures
- implementation and monitoring of organisational WHS/OHS policies and procedures
- work records, reports, documentation and communication
- effective verbal and written communication techniques.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy

requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS030 Install high voltage mobile generator

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to install a high voltage (HV) mobile generator in the electricity supply industry (ESI).

It includes selecting, connecting, synchronising, operating and disconnecting of a temporary mobile generator to HV network assets to maintain supply.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold a UET Certificate III Qualification or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician or Electrical Fitter qualification or the equivalent issued in an Australian state or territory.*

Electricians or Electrical Fitters are still required to complete the unit UETDRIS032 Solve problems in network equipment or equivalent to meet the requirements of working within the electricity supply industry (ESI).

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install HV mobile generator	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Install HV mobile generator	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements

	2.3	Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.4	Hazard control measures are monitored in accordance with workplace requirements
	2.5	HV mobile generator is installed in accordance with workplace requirements
	2.6	HV mobile generator is synchronised to HV network in accordance with the work plan and workplace requirements
	2.7	HV mobile generator is monitored in accordance with the work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.3	Work permits are signed off in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector

Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRIS016 Install mobile generation set for synchronised HV Genset.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS030 Install high voltage mobile generator

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
    - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- high voltage (HV) generator principles, including:
    - evaluating load and assessing suitability
    - operating
    - connecting
    - disconnecting
    - synchronising onto the HV network without interruption to supply
    - removal from the HV network without interruption to supply.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits

- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- techniques for connecting, operating and disconnecting of generators, including:
  - synchronising of generator control systems onto the network without interruption to supply
  - removal of generator from network without interruption to supply
  - evaluating load
  - assessing generator suitability
  - multiple generators
  - operating generators in parallel on a HV circuit
  - safety precautions.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS031 Maintain insulating oil

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain insulating oil in the electricity supply industry (ESI).

It includes procedures to sample, test, filter and reinstate insulating oil.

It also includes safe handling and environmental practices for sampling and filtering oil.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain insulating oil	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work permits are determined in accordance with workplace requirements
	1.7 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain insulating oil	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.4 Insulating oil is maintained in accordance with workplace requirements
	2.5 Quality checks of work are undertaken in accordance

		with work plan and workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work permits are signed off in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRIS019 Sample, test, filter and reinstate insulating oil.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS031 Maintain insulating oil

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintain insulating oil on at least two (2) of the following types of equipment:
  - instrument and power transformers
  - switchgear
  - cable
  - reactor.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements
- types and application of PPE
- hazard, risk assessment and risk control requirements, including potential hazards
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident

- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- manuals, diagrams and drawings
- procedures to sample, test, filter and reinstate insulating oil
- safe handling and environmental issues for sampling and filtering oil.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS032 Solve problems in network equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to solve problems in network equipment in the electricity supply industry (ESI).

It includes fundamental knowledge of energy generation, transmission, distribution, substations, and overhead and underground systems.

It also includes voltage regulation, types of system faults and protection, and metering.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to solve problems in network equipment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work permits are determined in accordance with workplace requirements
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
2 Solve problems in network equipment	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Work permits are received and signed in accordance with workplace requirements
	2.4 Problems in network equipment are solved in accordance with workplace requirements
	2.5 Hazard control measures are monitored in accordance with workplace requirements
	2.6 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.7 Quality checks of work are undertaken in accordance with work plan and workplace requirements

3 Complete work and documentation	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements
	3.3 Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.4 Work permits are signed off in accordance with workplace requirements
	3.5 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRIS67 Solve problems in energy supply network equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS032 Solve problems in network equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- solving problems in network equipment, including:
  - determining equipment operating parameters
  - determining scope of work and resource requirements
  - applying problem-solving techniques
  - applying manufacturer's settings to meet network requirements
  - conducting functional testing
- solving problems in network equipment on at least one (1) of the following network systems:
  - distribution overhead
  - distribution underground
  - transmission overhead
  - transmission underground
- using at least three (3) of the following distribution/transmission equipment types:
  - voltage regulation equipment
  - on-load tap changers (OLTCs)
  - energy metering
  - demand meters
  - load control
  - current transformers

- potential transformers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- principles of all of the following:
  - generation
  - transmission
  - distribution
  - substations
  - overhead and underground systems,
  - inductance, capacitance and resistance
  - voltage regulation
  - transformers and OLTCs
  - line drop compensation
  - types of system faults and protection
  - voltage surges
  - metering and metered quantities
  - load control.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRIS033 Solve problems in network protection

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to solve problems in network protection in the electricity supply industry (ESI).

It includes the fundamental knowledge of primary network components, and protection schemes and related components.

It also includes the use of manufacturer's manuals and specifications, problem-solving techniques, and completing workplace records.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS032 Solve problems in network equipment

Competency Field

Industry Specific Cross Discipline

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to solve problems in network protection	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work permits are determined in accordance with workplace requirements
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
2 Solve problems in network protection	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Work permits are received and signed in accordance with workplace requirements
	2.4 Problems in network protection are solved in accordance with workplace requirements
	2.5 Hazard control measures are monitored in accordance with workplace requirements

	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.7	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.4	Work permits are signed off in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRIS68 Solve problems in energy supply network protection equipment and systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRIS033 Solve problems in network protection

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- solving problems in network equipment, including:
  - determining equipment operating parameters
  - determining scope of work and resource requirements
  - applying problem-solving techniques
  - applying manufacturer's settings to meet network requirements
  - conducting functional testing
- solving problems in network systems including at least one (1) of the following:
  - distribution overhead
  - distribution underground
  - transmission overhead
  - transmission underground
- solving problems in protection equipment and systems including at least two (2) of the following:
  - over-current protection
  - earth fault protection
  - differential protection
  - oil and gas devices
  - busbar protection

- surge protection
- conventional relays
- electronic relays
- reclosers/sectionalisers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- use of manufacturer's instructions, diagrams and manuals
- fundamentals of primary components, including:
  - power transformers
  - generators
  - feeders
  - reclosers/sectionalisers
  - busbars
- fundamentals of protection schemes and components, including:
  - voltage transformers
  - current transformers
  - transducers
  - relays.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic

and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP001 Apply access authority procedures to work on or near electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit covers the knowledge and understanding of electricity supply industry (ESI) access authority procedures for work on or near ESI electrical apparatus.

It includes the relevant state and territory access authority procedures, and organisational workplace requirements and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

No licensing applies to this unit at the time of publication.

Other conditions may also apply under state and territory legislative and regulatory licencing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

outcomes.	demonstrate achievement of the element.
1 Prepare to apply access authority procedures	**1.1** Organisational workplace requirements for access authority are identified
	1.2 Access authority permit is obtained in accordance with workplace requirements
	1.3 Access authority permit document is interpreted and confirmed for the specific work activity in accordance with workplace requirements
	1.4 Personnel are confirmed as appropriately authorised to apply access authority procedures in accordance with workplace requirements
	1.5 Hazards are identified, risks assessed, and control measures identified
2 Apply access authority procedures	**2.1** Hazard control measures are applied and monitored in accordance with workplace requirements
	2.2 Access authority permit specific roles and responsibilities are explained and acknowledged
	2.3 Permitted access area/s are confirmed and acknowledged against the access authority requirements
	2.4 Access authority permit is signed on in accordance with workplace requirements
3 Complete access authority procedures	**3.1** Access authority permit conditions are confirmed before sign off in accordance with workplace requirements
	3.2 Access authority permit is signed off in accordance with workplace requirements
	3.3 Access authority permit documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRRF09 Apply access procedures to work on or near electrical network infrastructure.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP001 Apply access authority procedures to work on or near electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational access authority requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- receiving access authority permit in accordance with workplace requirements
- confirming roles and responsibilities of the workers with the access authority permit
- following workplace requirements for signing on and off from an access authority permit.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- access authority codes of practice, guidelines and organisational workplace requirements for work on or near electrical apparatus
- hazard, risk assessment and risk control requirements
- organisational access authority procedures including:
  - roles and responsibilities for access authority permit
  - access authority permit for a specific work activity
  - sign on and sign off procedures for an access authority permit
  - cancelling or suspending an access authority permit
  - communication procedures to confirm work is completed or suspended
  - relevant authorisation requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the

time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements used in industry for applying access authority procedures to work on or near electrical apparatus

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit covers the knowledge and understanding of electricity supply industry (ESI) safety rules for work on, near or in the vicinity of ESI electrical apparatus.

It includes the relevant state and territory safety rules, and organisational workplace requirements and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements

No licensing applies to this unit at the time of publication.

Other conditions may also apply under state and territory legislative and regulatory licencing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Identify ESI safety rules for work on, near or in the vicinity of ESI electrical	**1.1** ESI safety rules, codes of practice and guidelines are identified

	apparatus		
		1.2	Organisational workplace hazard and risk assessment requirements are identified
		1.3	Organisational workplace access authority requirements are identified
2	**Interpret ESI safety rules for work on, near or in the vicinity of ESI electrical apparatus**	**2.1**	ESI safety rules, codes of practice and guidelines application are interpreted
		2.2	Organisational workplace hazard and risk assessment requirements are interpreted
		2.3	Organisational workplace access authority requirements are correctly interpreted

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRRF01 Apply ESI safety rules, codes of practice and procedures for work on or near electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying relevant electricity supply industry (ESI) safety rules, codes of practice and guidelines
- identifying organisational workplace requirements for:
  - electrical hazards
  - assessing risks
  - recording control measures
- identifying organisational safe approach distances (SAD) for:
  - personnel
  - vehicles
  - insulated mobile plant
  - non-insulated mobile plant
- identifying organisational access authority requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- ESI safety rules, codes of practice and guidelines
- organisational requirements for:
  - safe approach distances (SAD)
  - safety observer roles
  - hazard, risk assessment and control measures
  - access authority
  - emergency response procedures
  - types and application of personal protective equipment (PPE).

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP003 Perform cable pit/trench/excavation rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform cable pit/trench/excavation rescue in an electricity supply industry (ESI) environment.

It includes the organisational workplace requirements for a cable pit/trench/excavation rescue as it applies to live low voltage (LV) cable jointing in the workplace. It also includes inspection and use of rescue equipment, and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation

and

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL005 Work safely in the vicinity of live electrical apparatus

or

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform cable pit/trench/excavation rescue	**1.1** Workplace requirements for the rescue are identified and confirmed
	1.2 Rescue equipment including personal protective equipment (PPE) is obtained, inspected and positioned in accordance with workplace requirements
2 Carry out cable pit/trench/excavation rescue	**2.1** Situation is assessed, and rescue response is activated in accordance with workplace requirements
	2.2 Cable pit/trench/excavation is accessed in accordance with workplace requirements
	2.3 Casualty is removed from live apparatus in accordance with workplace requirements
	2.4 Casualty is removed from the cable pit/trench/excavation in accordance with workplace requirements
3 Complete the cable pit/trench/excavation rescue procedures	**3.1** Casualty is assessed in accordance with workplace requirements
	3.2 Incident site is secured and entry controlled in accordance with workplace requirements
	3.3 Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRRF001 Perform cable pit/trench/excavation rescue.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP003 Perform cable pit/trench/excavation rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational rescue requirements
- identifying hazards, assessing risks and applying control measures
- obtaining, inspecting and positioning rescue equipment
- fitting of rescue personal protective equipment (PPE)
- performing cable pit/trench/excavation rescue in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- organisational procedures for cable pit/trench/excavation rescue including:
  - inspection and positioning of rescue equipment
  - types and application of rescue PPE
  - assessment and control hazards to rescuer, casualty and others
  - isolation procedures, where appropriate
  - safe approach distances (SAD) appropriate to cable pit/trench/excavation rescue
  - assessment of situation
  - activation of emergency rescue response
  - cable pit/trench/excavation access
  - electrical contact release
  - removal of casualty to safe location
  - assessment of casualty
  - incident site security
  - reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate equipment and rescue PPE currently used in industry for performing cable pit/trench/excavation rescues
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP004 Perform elevated work platform controlled descent escape

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform an elevated work platform (EWP) controlled descent escape in an electricity supply industry (ESI) environment.

It includes the organisational workplace requirements for the self-rescue from a raised EWP, and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

or

TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform EWP controlled descent escape	**1.1** Workplace requirements for controlled descent escape are identified and confirmed
	1.2 Controlled descent escape equipment is obtained and inspected in accordance with workplace requirements
2 Carry out EWP controlled descent escape	**2.1** Situation is assessed, and response is activated in accordance with workplace requirements
	2.2 Controlled descent escape equipment is used to evacuate an EWP in accordance with workplace requirements
3 Complete the EWP controlled descent escape	**3.1** Incident site is secured and entry controlled in accordance with workplace requirements
	3.2 Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRRF08 Perform EWP controlled descent escape.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP004 Perform elevated work platform controlled descent escape

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational controlled descent requirements
- identifying hazards, assessing risks and applying control measures
- obtaining, inspecting, securing and attaching controlled descent equipment in accordance with workplace requirements
- evacuating the elevated work platform (EWP) and descending to the ground in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- organisational procedures for EWP controlled descent escape including:
  - inspection and placement of controlled descent equipment
  - assessment and control hazards to self and others
  - safe approach distances (SAD) appropriate to EWP controlled descent escape
  - assessment of situation
  - activation of emergency response, where appropriate
  - fitting and use of controlled descent escape equipment
  - incident site security
  - reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate equipment currently used in industry for performing EWP controlled descent escapes
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP005 Perform elevated work platform rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform an elevated work platform (EWP) rescue in the electricity supply industry (ESI) environment.

It includes the organisational workplace requirements for the inspection and use of EWP retrieval systems, and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation

and

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

or

TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

or

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform EWP rescue procedures	**1.1** Workplace requirements for the rescue are identified and confirmed
	1.2 EWP retrieval systems are inspected for operational serviceability in accordance with workplace requirements
2 Carry out EWP rescue procedures	**2.1** Situation is assessed, and rescue response is activated in accordance with workplace requirements
	2.2 EWP retrieval systems are accessed in accordance with workplace requirements
	2.3 EWP retrieval systems are used to rescue casualty in accordance with workplace requirements
3 Complete the EWP rescue procedure	**3.1** Casualty is assessed in accordance with workplace requirements
	3.2 Incident site is secured and entry controlled in accordance with workplace requirements
	3.3 Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector

Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRRF002 Perform EWP rescue.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP005 Perform elevated work platform rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational elevated work platform (EWP) rescue requirements
- identifying hazards, assessing risks and applying control measures
- identifying and inspecting EWP retrieval systems for operational serviceability
- performing EWP rescue in accordance with workplace requirements
- removing the casualty from the EWP to the ground in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- EWP retrieval systems
- organisational EWP rescue procedures including:
  - inspection and operational serviceability of EWP retrieval systems
  - assessment and control hazards to rescuer and personnel
  - safe approach distances (SAD) appropriate to EWP rescue
  - activation of emergency rescue response
  - removal of casualty from the EWP to the ground
  - relocation of casualty to safe location
  - incident site security
  - reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the

time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate EWP retrieval systems currently used in industry for performing EWP rescue
- applicable documentation, including workplace procedures, equipment specifications and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP006 Perform pole top rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform pole top rescue in an electricity supply industry (ESI) environment.

It includes the organisational workplace requirements for the inspection and use of pole top rescue equipment, and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation

and

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL005 Work safely in the vicinity of live electrical apparatus

or

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform pole top rescue	**1.1** Workplace requirements for the rescue are identified and confirmed
	1.2 Rescue equipment including personal protective equipment (PPE) is obtained and inspected in accordance with workplace requirements
2 Carry out pole top rescue	**2.1** Situation is assessed, and rescue response is activated in accordance with workplace requirements
	2.2 Pole top is accessed in accordance with workplace requirements
	2.3 Rescue equipment is attached in accordance with workplace requirements
	2.4 Rescue equipment is used to rescue casualty in accordance with workplace requirements
3 Complete the pole top rescue procedure	**3.1** Casualty is assessed in accordance with workplace requirements
	3.2 Incident site is secured and entry controlled in accordance with workplace requirements
	3.3 Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRRF003 Perform pole top rescue.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP006 Perform pole top rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational rescue requirements
- identifying hazards, assessing risks and applying control measures
- obtaining and inspecting rescue equipment
- obtaining, inspecting and using personal protective equipment (PPE)
- fitting of personal protective rescue equipment
- performing pole top rescue in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- types and application of PPE
- organisational procedures for pole top rescue including:
  - inspection and placement of rescue equipment
  - assessment and control hazards to rescuer, casualty and others
  - isolation procedures, where appropriate
  - safe approach distances (SAD) appropriate to pole top rescue
  - assessment of situation
  - activation of emergency response
  - pole top access
  - attachment of rescue equipment
  - electrical contact release
  - lowering casualty safely to ground
  - removal of casualty to safe location
  - assessment of casualty
  - incident site security
  - reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry for performing pole top rescue
- applicable documentation, including workplace requirements, equipment specifications and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP007 Perform rescue from a live low voltage panel

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform a rescue from live low voltage (LV) electrical apparatus in an electricity supply industry (ESI) environment. This does not include overhead lines and underground cables.

It includes the organisational workplace requirements for the inspection and use of live LV panel rescue equipment, and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation

and

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

or

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform rescue procedures from live LV panel	**1.1** Workplace requirements for the rescue are identified and confirmed
	1.2 Electricity isolation point is identified
	1.3 Rescue equipment including personal protective equipment (PPE) is obtained and inspected in accordance with workplace requirements
2 Carry out rescue from live LV panel	**2.1** Situation is assessed, and rescue response is activated in accordance with workplace requirements
	2.2 Casualty is removed from the live LV panel in accordance with workplace requirements
3 Complete the LV panel rescue procedure	**3.1** Casualty is assessed in accordance with workplace requirements
	3.2 Incident site is secured and entry controlled in accordance with workplace requirements
	3.3 Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRRF004 Perform rescue from a live LV panel.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP007 Perform rescue from a live low voltage panel

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational rescue requirements
- identifying hazards, assessing risks and applying control measures
- identifying the isolation point
- obtaining and inspecting rescue equipment
- fitting of rescue personal protective equipment (PPE)
- performing a rescue from a live low voltage (LV) panel in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- organisational procedures for the rescue of a casualty from a live LV panel including:
  - inspection and placement of rescue equipment
  - types and application of rescue PPE
  - assessment and control hazards to rescuer, casualty and others
  - isolation identification procedures
  - safe approach distances (SAD) appropriate to rescue from a live LV panel
  - assessment of situation
  - activation of emergency response
  - electrical contact release
  - removal of casualty to safe location
  - assessment of casualty
  - incident site security
  - reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate equipment and PPE currently used in industry for performing rescues from a live LV panel
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP008 Perform rescue from switchyard structures

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform switchyard structures rescue in an electricity supply industry (ESI) environment.

It includes the organisational workplace requirements for the inspection and use of switchyard structures rescue equipment, and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation

UETDRMP002 ESI safety rules for work on, near or in the vicinity of electrical apparatus

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform rescue from switchyard structures	**1.1** Workplace requirements for the rescue are identified and confirmed
	1.2 Rescue equipment including personal protective equipment (PPE) is obtained, inspected and positioned in accordance with workplace requirements
2 Carry out rescue from switchyard structures	**2.1** Situation is assessed, and rescue response is activated in accordance with workplace requirements
	2.2 Switchyard structures are accessed in accordance with workplace requirements
	2.3 Rescue equipment is attached in accordance with workplace requirements
	2.4 Rescue equipment is used to rescue casualty in accordance with workplace requirements
3 Complete rescue procedures from switchyard structures	**3.1** Casualty is assessed in accordance with workplace requirements
	3.2 Incident site is secured and entry controlled in accordance with workplace requirements
	3.3 Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRRF005 Perform rescue from switchyard structures at heights.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP008 Perform rescue from switchyard structures

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational rescue requirements
- identifying hazards, assessing risks and applying control measures
- obtaining, inspecting and positioning rescue equipment
- obtaining, inspecting and using personal protective equipment (PPE)
- fitting of personal protective rescue equipment
- performing switchyard structures rescue in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- types and application of PPE
- organisational procedures for switchyard structures rescue including:
  - inspection and placement of rescue equipment
  - assessment and control hazards to rescuer, casualty and others
  - isolation procedures, where appropriate
  - safe approach distances (SAD) appropriate to switchyard structures rescue
  - assessment of situation
  - activation of emergency response
  - switchyard structures access
  - attachment of rescue equipment
  - lowering casualty safely to ground
  - removal of casualty to safe location
  - assessment of casualty
  - incident site security
  - reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate equipment and PPE currently used in industry for performing rescues from switchyard structures
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP009 Perform tower rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform tower rescue in an electricity supply industry (ESI) environment.

It includes the organisational workplace requirements for the inspection and use of tower rescue equipment, and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing ESI or Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation

and

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

or

CPCCLDG3001 Licence to perform dogging

CPCCLRG3001 Licence to perform rigging basic level

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform tower rescue	**1.1** Workplace requirements for the rescue are identified and confirmed
	1.2 Rescue equipment including personal protective equipment (PPE) is obtained, inspected and positioned in accordance with workplace requirements
2 Carry out tower rescue	**2.1** Situation is assessed, and rescue response is activated in accordance with workplace requirements
	2.2 Tower is accessed in accordance with workplace requirements
	2.3 Rescue equipment is attached in accordance with workplace requirements
	2.4 Rescue equipment is used to rescue casualty in accordance with workplace requirements
3 Complete the tower rescue procedure	**3.1** Casualty is assessed in accordance with workplace requirements
	3.2 Incident site is secured and entry controlled in accordance with workplace requirements
	3.3 Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRRF006 Perform tower rescue.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP009 Perform tower rescue

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying organisational rescue requirements
- identifying hazards, assessing risks and applying control measures
- obtaining, inspecting and positioning rescue equipment
- fitting of rescue personal protective equipment (PPE)
- obtaining, inspecting and using PPE
- performing tower rescue in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- types and application of PPE
- organisational procedures for tower rescue including:
  - inspection and placement of rescue equipment
  - assessment and control hazards to rescuer, casualty and others
  - isolation procedures, where appropriate
  - safe approach distances (SAD) appropriate to tower rescue
  - assessment of situation
  - activation of emergency response
  - tower access
  - attachment of rescue equipment
  - lowering casualty safely to ground
  - removal of casualty to safe location
  - assessment of casualty
  - incident site security
  - reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate equipment and PPE currently used in industry for performing tower rescue
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP010 Provide first aid in an ESI environment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to provide first aid in an electricity supply industry (ESI) environment.

It includes the recognition and provision of an initial response where first aid is required and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

No licensing applies to this unit at the time of publication.

Pre-requisite Unit

HLTAID009 Provide cardiopulmonary resuscitation

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to provide first aid in an ESI environment	**1.1** First aid equipment is accessed in accordance with workplace requirements
	1.2 Site is assessed for danger to self, casualty and others in accordance with workplace requirements

	1.3	Assistance is sought from others, if required
	1.4	Emergency services appropriate to the situation are notified
2 Carry out the provision of first aid in an ESI environment	**2.1**	Physical condition and visible vital signs of the casualty are assessed
	2.2	First aid is provided to stabilise the casualty's condition in accordance with recognised first aid procedures
	2.3	Available first aid equipment is used as appropriate
	2.4	Information about the casualty's condition is conveyed accurately and clearly to emergency services personnel, as required
3 Complete provision of first aid in an ESI environment	**3.1**	Incident site is secured and entry controlled in accordance with workplace requirements
	3.2	Incident is reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRRF007 Provide first aid in an ESI environment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP010 Provide first aid in an ESI environment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- checking site for danger to self, casualty and others
- providing first aid for (2) two of the following:
  - electrical burns*
  - bites or stings
  - shock
  - bleeding
  - electrical shock
  - (*mandatory)
- monitoring and managing casualty.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- provision of first aid including:
  - assessment and control of dangers to rescuer, casualty and others
  - notification of external emergency services
  - the treatment of electrical burns, shock, bites, stings, bleeding and electric shock
  - first aid equipment and resources
  - first aid injury management principles.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the

time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate equipment currently used in industry for providing first aid in an ESI environment
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP011 Testing of connections to low voltage electricity networks

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform testing of connections to low voltage (LV) electricity networks in the electricity supply industry (ESI) environment.

It includes the requirements for testing when connecting and/or reconnecting a customer's installation to an electricity supply network and how it applies to ESI workers to meet work health and safety (WHS)/occupational health and safety (OHS), mobility and mutual aid requirements.

Note: Those holding an existing Certificate III ESI or Certificate III Electrotechnology qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

and

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS010 Install and maintain low voltage overhead services

or

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS011 Install and maintain low voltage underground services

or

UETDRIS014 Install and replace energy meters and associated equipment

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform test procedures	**1.1** Workplace requirements for perform testing of connections are identified and confirmed
	1.2 Hazards are identified, risks assessed, and control measures identified and applied
	1.3 Tools, equipment and personal protective equipment (PPE) required for testing are determined, obtained and confirmed in working order
2 Carry out test procedures	**2.1** Hazard control measures are monitored in accordance with workplace requirements
	2.2 Use of tools, equipment and PPE for testing are carried out in accordance with workplace requirements
	2.3 Testing of connections to electricity networks are conducted in accordance with workplace requirements and AS4741
	2.4 Corrective actions are undertaken in accordance with workplace requirements

3 Complete the test procedures	**3.1** Test results are recorded in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and not equivalent to UETTDRRF11 Testing of connections to low voltage electricity networks.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP011 Testing of connections to low voltage electricity networks

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on one occasion and include:

- identifying hazards, assessing risks and applying control measures
- preparing and using test equipment
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- testing of single phase and multi-phase connections in accordance with workplace requirements
- recording test results in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- low voltage (LV) testing of network connections including:
  - selection, inspection and use of test equipment relevant for the testing procedures
  - types and application of PPE
  - acceptable neutral voltage criteria
  - polarity testing
  - neutral integrity testing
  - phase rotation testing
  - phasing confirmation
  - corrective actions in accordance with workplace requirements
  - recording results in accordance with workplace requirements
  - test procedures of single phase and multi-phase connections in accordance with workplace requirements and AS4741
  - identification of secondary points of contact
- causes and effects of incorrect and poor electrical connections.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must observe candidates completing tasks in an individual setting. Practical assessment conducted in groups is not appropriate for this unit.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry for testing of connections to LV electricity networks
- applicable documentation including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP012 Working on energised low voltage overhead electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit involves the skills and knowledge required to perform overhead energised low voltage (LV) work in an electricity supply industry (ESI) environment. This does not include the connection of overhead services.

It includes energised LV overhead mains work techniques and the use of specialised equipment in accordance with workplace requirements.

Note: Those holding an existing Certificate III ESI - Distribution Overhead qualification or equivalent meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDO005 Maintain overhead energised low voltage distribution network

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work on energised LV overhead electrical apparatus	**1.1** Workplace requirements for working on energised electrical apparatus are identified and confirmed
	1.2 Hazards are identified, risks assessed, and control measures identified and applied
	1.3 Tools, equipment, and personal protective equipment (PPE) required for energised LV work are determined, obtained and confirmed in working order
	1.4 Safety observer is appointed in accordance with workplace requirements
2 Carry out work on energised LV overhead electrical apparatus	**2.1** Hazard control measures are monitored in accordance with workplace requirements
	2.2 Use of tools, equipment and PPE for energised LV work are carried out in accordance with workplace requirements
	2.3 Energised LV work is carried out in accordance with workplace requirements
3 Complete the work on energised LV overhead electrical apparatus	**3.1** Completed work is checked for compliance against workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Companion Volume Implementation Guide.

Unit Mapping Information

This is a newly created unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP012 Working on energised low voltage overhead electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- identifying hazards, assessing risks and applying control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- using at least three (3) of the following specialised low voltage (LV) equipment:
  - insulating mats/sleeves
  - temporary bridging device
  - insulating gloves
  - tensioning devices
  - pole shrouds
- maintaining correct body positioning to avoid secondary points of contact
- performing work on energised LV overhead electrical apparatus in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- organisational workplace requirements for work on energised LV overhead electrical apparatus including:
  - energised LV work principles and techniques
  - role of safety observer
- hazard, risk assessment and risk control requirements including potential hazards
- types and application of PPE
- specialised LV equipment including:
  - types
  - application
  - care and maintenance
  - inspection and testing.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry for working on energised LV overhead electrical apparatus
- applicable documentation, including workplace requirements.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRMP013 Working on energised low voltage underground electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to perform underground energised low voltage (LV) work in electricity supply industry (ESI) environment. This does not include the connection of underground services.

It includes energised LV underground mains work techniques and the use of specialised equipment in accordance with workplace requirements.

Note: Those holding an existing Certificate III ESI - Distribution Underground qualification or equivalent, or relevant underground/cable jointing licence for energised work meet the prerequisite unit requirements.

Refer to the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide for equivalency definition.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRDU011 Joint, terminate and maintain energised low voltage underground polymeric cable

UETDRDU015 Joint, terminate and maintain low voltage underground polymeric cable

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Mobility and Portability

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work on energised LV underground electrical apparatus	**1.1** Workplace requirements for working on energised electrical apparatus are identified and confirmed
	1.2 Hazards are identified, risks assessed, and control measures identified and applied
	1.3 Tools, equipment, and personal protective equipment (PPE) required for energised LV work are determined, obtained and confirmed in working order
	1.4 Safety observer is appointed in accordance with workplace requirements
2 Carry out work on energised LV underground electrical apparatus	**2.1** Hazard control measures are monitored in accordance with workplace requirements
	2.2 Use of tools, equipment and PPE for energised LV work are carried out in accordance with workplace requirements
	2.3 Energised LV work is carried out in accordance with workplace requirements
3 Complete the work on energised LV underground electrical	**3.1** Completed work is checked for compliance against workplace requirements

apparatus

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Companion Volume Implementation Guide.

Unit Mapping Information

This is a newly created unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRMP013 Working on energised low voltage underground electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- identifying hazards, assessing risks and applying control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- using specialised low voltage (LV) equipment including:
  - insulating mats/sleeves
  - insulating gloves
- using insulated tools
- maintaining correct body positioning to avoid secondary points of contact
- performing work on energised LV underground electrical apparatus in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- organisational workplace requirements for work on energised LV underground electrical apparatus including:
  - energised LV work principles and techniques
  - role of safety observer
- hazard, risk assessment and risk control requirements including potential hazards
- types and application of PPE
- specialised LV equipment including:
  - types
  - application
  - care and maintenance
  - inspection and testing.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry for working on energised LV underground electrical apparatus
- applicable documentation, including workplace requirements.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRC001 Install and maintain low voltage overhead services in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain low voltage (LV) overhead services in a very remote community in the electricity supply industry (ESI).

It includes the installation, maintenance and connection of LV overhead service cables and associated equipment between the customer's connection point and the network point of supply.

It also includes testing and commissioning, identifying and rectifying faults, and the repair and replacement of service cables.

All installation and maintenance of LV overhead service cables in very remote communities must be undertaken in an isolated environment other than for testing purposes.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain LV overhead services	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work permits are received and signed in accordance with workplace requirements
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.7 Overhead electrical distribution network is verified as isolated and earthed/short circuited in accordance with workplace requirements
	1.8 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.9 Worksite is prepared in accordance with work plan and workplace requirements
	1.10 Traffic management plan is confirmed as being in place

		in accordance with workplace requirements
2 Carry out installation and maintenance of LV overhead services	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Installation and maintenance of the LV overhead service is completed in accordance with work plan and workplace requirements
	2.5	Earthing and short circuiting equipment is removed, permit signed off and overhead electrical distribution network is re-energised in accordance with workplace requirements
	2.6	LV overhead service connections are tested in accordance with work plan and workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.8	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS36 Install and maintain low voltage services in remote communities (overhead).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRC001 Install and maintain low voltage overhead services in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- verifying power systems electrical distribution network has been isolated and earthed and short circuited in accordance with work plan and workplace requirements
- connecting low voltage (LV) overhead service cables, including at least two (2) of the following:
  - three phase *
  - single phase
  - two phase
  - (* must do)
- installing LV overhead service protection devices, including at least one (1) of the following:
  - service fuse
  - circuit breakers (pole)
  - service link
- testing LV overhead service cable connections, including all the following:
  - polarity test
  - phase rotation test
  - continuity test
  - voltage test
  - neutral loop impedance
  - insulation resistance
- restoring supply to LV electricity networks in accordance with work plan and workplace

requirements
- working from at least one (1) of the following:
  - elevated work platform (EWP)
  - platform
  - ladder
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- types and characteristics of LV overhead service equipment, including:
  - connectors
  - insulation piercing connectors (IPCs)
  - service termination devices
  - fuse holders
  - fuses
  - service poles
  - point-of-attachment brackets
  - mains connection boxes
- construction manuals, system diagrams, plans and drawings
- types, sizes and characteristics of LV overhead service cables, including:
  - two, three and four-core cable
  - cable cross-sectional area of conductors
  - current ratings
  - cable insulation materials
- types of installation plant, equipment and tools, including:
  - EWPs
  - ladders
  - service cable puller and tension tool
  - stripping tools
  - ABC spanner and spreader

- installation techniques, including:
  - consumer poles
  - location of attachments
  - methods of stringing, tensioning and terminating
  - minimum clearances to assets, structures and the ground
  - maximum span lengths and service cable tensions
- connection principles, including:
  - relevant electrical access permit
  - purpose and function of the multiple earth neutral (MEN) system
  - types of connection faults
  - causes and effects of incorrect and poor electrical connections
  - principles of loop impedance
  - reasons for and methods used to maintain standard phase sequencing
  - purpose and operation of service fusing
- testing and commissioning procedures, including:
  - inspection
  - equipment functionality
- use of independent earth for testing:
  - continuity
  - insulation testing
  - polarity, voltage and phase sequence
  - neutral integrity
  - meter function
- connection testing forms and documentation
- techniques for maintenance of overhead services, including:
  - inspection
  - types of faults
  - diagnosis and repair of faults
  - removing and replacing services and fuses
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining overhead LV services in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRC002 Install and maintain low voltage underground services in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain low voltage (LV) underground services in very remote communities in the electricity supply industry (ESI).

It includes the installation and maintenance of LV underground services and associated equipment between the customer's connection point and the network point of supply.

It also includes testing and commissioning, identifying and rectifying faults, and the repair and replacement of service cables.

All installation and maintenance of LV underground service cables in very remote communities must be undertaken in an isolated environment other than for testing purposes.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain LV underground services	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Underground electrical distribution network is verified as isolated and earthed/short circuited in accordance with workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Plant, tools, equipment, and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.9 Worksite is prepared in accordance with work plan and workplace requirements
	1.10 Traffic management plan is confirmed as being applied

		in accordance with workplace requirements
2 Carry out installation and maintenance of LV underground services	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Installation and maintenance of LV underground service is completed in accordance with work plan and workplace requirements
	2.5	Earthing and short circuiting equipment is removed, permit signed off and underground electrical distribution network is re-energised in accordance with workplace requirements
	2.6	LV underground services are tested in accordance with work plan and workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.8	Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS37 Install and maintain low voltage services in remote communities (underground).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRC002 Install and maintain low voltage underground services in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- verifying underground electrical distribution network has been isolated and earthed/short circuited in accordance with workplace requirements
- connecting low voltage (LV) underground services cables, including at least two (2) of the following:
  - underground pillar/pit connection (three phase)*
  - underground pillar/pit connection (single phase)
  - underground to overhead connection
  - (* must do)
- installing LV underground service protection devices, including at least one (1) of the following:
  - fuse units
  - circuit breakers
  - service links
- testing LV underground service cable connections, including all of the following:
  - polarity test
  - phase rotation test
  - continuity test
  - voltage test
  - insulation resistance
  - neutral loop impedance

- re-energising underground electrical distribution network in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- types, sizes and characteristics of LV underground service cables, including
  - two, three and four-core cable
  - cable cross-sectional area of conductors
  - current ratings
  - fuse types and ratings
  - cable insulation materials
- types and characteristics of LV service associated equipment, including:
  - conduit
  - heat/cold-shrink materials
  - cable labelling
  - pillars and pits
- construction manuals, system diagrams/plans and drawings
- types of installation plant, tools and equipment
- installation techniques, including:
  - methods of laying cable
  - sand and slabbing
  - minimum depths to assets in ground
- jointing and terminating methods, including:
  - polymeric heat/cold-shrink materials
  - polymeric tape materials
  - insulation piercing connectors (IPCs)
  - energised and de-energised cables
  - connections to point of entry, fuse boxes, pillars and pits
- connection principles, including:

  - purpose and function of the multiple earth neutral (MEN) system
  - types of connection faults
  - causes and effects of incorrect and poor electrical connections
  - principles of loop impedance
  - reasons for and methods used to maintain standard phase sequencing
  - purpose and operation of service fusing
  - relevant electrical access permit
- testing and commissioning procedures, including:
  - pre-energisation tests, including continuity and insulation resistance
  - inspection
  - equipment functionality
  - use of independent earth for testing
  - polarity, voltage and phase sequence
  - neutral and phase identification
  - neutral integrity
  - commissioning test forms and documentation
  - meter function
- completing workplace documentation
- techniques for the maintenance of underground services, including:
  - inspection
  - types of faults
  - diagnosis and repair of faults
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used for installing and maintaining LV underground services in a very remote community

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRC003 Install and maintain public lighting systems in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain overhead and underground public lighting systems in very remote communities in the electricity supply industry (ESI).

It includes the installation and maintenance of public lighting poles/columns, street lighting cable, hardware and components, wiring and earthing systems. It also includes the inspection, testing and commissioning associated with the public lighting system.

All work on public lighting systems within very remote communities must be undertaken in an isolated environment other than for testing purposes.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain public lighting systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Work is prioritised and sequenced for completion in accordance with workplan and workplace requirements
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Public lighting system is verified as isolated and earthed/short circuited in accordance with workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.9 Worksite is prepared in accordance with work plan and workplace requirements
	1.10 Traffic management plan is confirmed as being in place

		in accordance with workplace requirements
2 Carry out installation and maintenance of public lighting systems	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Excavation/foundation construction is inspected and confirmed as compliant in accordance with work plan and workplace requirements
	2.5	Public lighting systems are installed and maintained in accordance with work plan and workplace requirements
	2.6	Hardware, fittings and control gear are installed in accordance with workplace requirements
	2.7	Street lighting cable and earthing systems are installed in accordance with workplace requirements
	2.8	Public lighting and hardware are inspected for compliance in accordance with work plan and workplace requirements
	2.9	Earthing and short circuiting equipment is removed, permit signed off and public lighting system is re-energised in accordance with workplace requirements
	2.10	Public lighting system is tested and commissioned in accordance with work plan and workplace requirements
	2.11	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.12	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in

accordance with workplace requirements

3.4 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.6 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS38 Install and maintain public lighting systems in remote communities.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRC003 Install and maintain public lighting systems in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- verifying public lighting system has been isolated and earthed/short circuited in accordance with work plan and workplace requirements
- installing and maintaining public lighting systems on poles or columns, including at least one (1) of the following:
  - wood
  - concrete
  - steel
  - composite
- installing lanterns/luminaires, including at least two (2) of the following:
  - high pressure mercury vapour
  - low pressure and high-pressure sodium vapour
  - fluorescent
  - quartz-halogen
  - light-emitting diode (LED)
- restoring supply to public lighting system in accordance with workplace requirements
- testing public lighting system connections, including all the following:
  - continuity test
  - voltage test
  - neutral loop impedance
  - insulation resistance

- undertaking maintenance of public lighting lanterns/luminaires, including at least two (2) of the following:
  - removing
  - repairing
  - replacing
  - cleaning
- working from at least one (1) of the following:
  - elevated work platform (EWP)
  - platform
  - ladder
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of work permits
- types of lighting systems for overhead and underground, including:
  - wood, concrete, steel and composite poles
  - public lighting brackets
  - associated hardware
- safety precautions specific to working on public lighting, including:
  - safe working practices and procedures
  - working at heights
  - permit to work systems
  - isolation procedures
- basic public lighting principles, including:
  - electromagnetic spectrum
  - principles of colour
  - behaviour of light
  - factors that affect illumination
- requirements for the use of workplace construction manuals, systems, diagrams, plans and drawings, including:

    - public light construction
    - public lighting circuits
    - earthing systems
- types of tools, equipment and specialised testing equipment
- types and function of lanterns/luminaries/lamps and control equipment, including:
    - high-pressure mercury vapour
    - low pressure and high-pressure sodium vapour
    - fluorescent
    - quartz-halogen
    - choke boxes
    - photo-electric cells
    - time switches
    - contactor boxes
    - LED
- techniques for the installation of public lighting systems
- techniques for the inspection, testing and commissioning of public lighting systems, including:
    - pre-energisation tests, including continuity and insulation resistance
    - use of specialist testing equipment
    - neutral and phase identification
    - neutral integrity
    - testing and commissioning forms and documentation
- application of specialist testing equipment, including:
    - voltage detectors
    - insulation resistance testers
    - clamp-on ammeters
    - continuity testers
    - fault indictors
- techniques for the maintenance of public lighting systems, including:
    - diagnosing faults
    - removal, repair, replacement and cleaning of public lighting and hardware
    - controlling and switching of public lighting systems
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used for installing and maintaining public lighting systems in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRC004 Install and replace energy meters and associated equipment in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and replace whole current energy meters and associated equipment in a very remote community in the electricity supply industry (ESI).

It includes the testing of whole current energy meters and associated equipment to identify faults and establish normal functions of energy meters and associated equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and replace energy meters and associated equipment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.7 Electrical network circuit is confirmed as being isolated and earthed/short circuited in accordance with workplace requirements
	1.8 Work permits are received and signed in accordance with workplace requirements
	1.9 Worksite is prepared in accordance with work plan and workplace requirements
2 Carry out the installation or replacement of energy meters and associated equipment	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, climbing, working at heights, the use of plant, tools, equipment and PPE are carried out in accordance

		with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Installation or replacement of whole current energy meters is carried out in accordance with workplace requirements
	2.5	Earthing/short circuiting equipment is removed, permit signed off and electrical network circuits re-energised in accordance with workplace requirements
	2.6	Whole current energy meters and associated equipment are tested in accordance with workplace requirements
	2.7	Whole current energy meters and associated equipment are programmed and sealed in accordance with workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS34 Install and replace energy meters and associated equipment in remote communities.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRC004 Install and replace energy meters and associated equipment in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- preparing to enter the workplace including the use of work permits, clearances and isolation permissions
- confirming electrical network circuits have been isolated and earthed/short circuited in accordance with work plan and workplace requirements
- installing or replacing at least one (1) of the following whole current energy meters:
  - induction disk energy meter
  - electronic energy meter
  - electronic summator
- installing at least two (2) of the following associated metering equipment:
  - service fuses
  - service links
  - meter panels
  - controlled output meters
- re-energising electrical network circuits in accordance with workplace requirements
- completing at least three (3) of the following tests of whole current energy meters:
  - polarity*
  - continuity
  - insulation resistance
  - meter functionality (load)
  - neutral integrity
  - phase sequence (rotation)

    - voltage
    - (*must do)
- working from at least one (1) of the following:
    - elevated work platform (EWP)
    - platform
    - ladder
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reporting and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
    - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- whole current energy meters, including:
    - construction
    - operation
    - error codes
- associated metering equipment, including:
    - construction
    - operation
- metering arrangements, including:
    - direct
    - distributed master
    - multiple master
    - plug-in
    - multiple earth neutral (MEN) system
- cable types and applications
- installation tools, equipment and testing devices
- installation and removal of energy meters, including:
    - stripping cable
    - cable terminations
    - meter wiring positions
    - service protection device (SPD)

    - meter boards
- testing procedures, including:
    - continuity
    - insulation resistance
    - polarity
    - phase sequence
    - neutral integrity
    - meter functionality
- procedures for recording energy meter documentation
- customer education on energy meters
- techniques for the maintenance of energy metering, including:
    - fault finding
    - fault rectification
    - meter reading
    - tariff changes
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and replacing whole current energy meters and associated equipment in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRC005 Maintain, test and verify power systems in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain, test and verify power systems and associated hardware in very remote communities in the electricity supply industry (ESI).

It includes working safely, isolating, maintaining and restoring generation power systems, solving problems on distribution electrical network circuits and apparatus, and completing functional testing.

It also includes using specialist tools, equipment, personal protective equipment (PPE), visual inspections, identifying non-compliance defects, the use of work permits and authorisation protocols.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may apply under State and Territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0007 Conduct periodic maintenance of remote area power supply generator sets

UEERE0018 Maintain and repair remote area power generation facilities

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEERE0023 Work safely with remote area power supply systems

UEERE0041 Maintain operation of remote area power generation plant

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain, test and verify power systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are identified and obtained in accordance with work plan and workplace requirements
	1.4 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work permits are received and signed in accordance with workplace requirements
	1.7 Switching/isolation schedule is developed in accordance with work plan and workplace requirements
	1.8 Plant, tools, equipment and PPE required for work are

		determined, obtained and confirmed in working order
	1.9	Specialist test equipment is obtained, confirmed in working order and calibrated in accordance with workplace requirements
	1.10	Worksite is prepared in accordance with work plan and workplace requirements
2 Carry out maintenance, testing and verification of generation power systems	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Generation power system switching/isolation authorisation is obtained in accordance with switching/isolation schedule and workplace requirements
	2.5	Generation power systems are isolated, proved de-energised and earthed in accordance with switching/isolation schedule and workplace requirements
	2.6	Generation power systems equipment and associated hardware is maintained in accordance with work plan and workplace requirements
	2.7	Generation power systems equipment and associated hardware are visually inspected to confirm compliance in accordance with work plan and workplace requirements
	2.8	Generation power system authorisation is obtained to commence restoration in accordance with switching/isolation schedule and workplace requirements
	2.9	Generation power systems are tested and verified compliant in accordance with work plan, work permits and workplace requirements
	2.10	Incidents or unplanned events are responded to in

		accordance with workplace requirements
	2.11	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Solve electrical network apparatus and network circuit problems	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Live testing or measuring requirements are determined in accordance with workplace requirements
	3.5	Electrical network apparatus and network circuits are confirmed as isolated and earthed/short circuited in accordance with workplace requirements
	3.6	Operating parameters of the circuit within the electrical network apparatus are verified in accordance with workplace requirements
	3.7	Operating parameters of the network electrical circuits are verified in accordance with workplace requirements
	3.8	Established methodical processes are used to identify electrical problems from measured and calculated values in accordance with workplace requirements
	3.9	Electrical network apparatus circuit problems are solved without damage to apparatus or circuits to comply with workplace requirements
	3.10	Electrical network circuit problems are solved without damage to apparatus or circuits to comply with workplace requirements
	3.11	Earthing/short circuiting equipment is removed, permit signed off and electrical network apparatus and network circuits re-energised in accordance with workplace requirements
	3.12	Electrical network apparatus and network circuits are tested to determine correct operation in accordance with

	workplace requirements
	3.13 Incidents or unplanned events are responded to in accordance with workplace requirements
4 Complete work and documentation	**4.1** Completed work is checked for compliance against the work plan and workplace requirements
	4.2 Incidents or unplanned events are reported in accordance with workplace requirements
	4.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRIS99 Test and Verify Distribution Remote Area Installations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRC005 Maintain, test and verify power systems in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- preparing, issuing and signing on and off relevant work permits in accordance with workplace requirements
- isolating and restoring generation power systems, including:
  - identifying isolation points
  - preparing a generation isolation and restoration permit to work schedule
  - obtaining authorisation to isolate and restore generation power systems
  - isolating and restoring generation power systems in accordance with switching/isolation schedule
- maintaining generation power system, including:
  - conducting routine safety inspections
  - inspecting generation power system facilities
  - carrying out scheduled generator engine service
  - checking generation power system fuel facilities
  - conducting generation power station operational readings
- testing and maintaining generation power systems, including:
  - electrical equipment and switchgear
  - electrical earthing systems
  - identifying non-compliance
  - rectifying non-compliance or defects
  - completing testing documentation
- confirming network apparatus and network electrical circuits are isolated
- determining the operating parameters of a circuit within the electrical network apparatus
- using established methodical processes to solve electrical problems in accordance with

workplace requirements, including:

- choosing correct instruments and ranges for testing and measuring values
- connecting instruments to measure and calculate values in electrical network apparatus and network circuits

- identifying electrical network apparatus and network circuits problems, including at least three (3) of the following:
  - high (HV)/low voltage (LV)
  - high resistance
  - low resistance
  - fault current (fuses)
  - kilowatt hour meter faults (no supply, reverse polarity etc)
  - public lighting faults
- working from at least one (1) of the following:
  - elevated work platform (EWP)
  - platform
  - ladder
- connecting and testing electrical network apparatus and network circuits to determine correct operation
- removing earthing/short circuiting equipment and re-energising electrical network apparatus and network circuits in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - environmental
  - wiring rules requirements – continuity test and insulation resistance test
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- types, purpose and application of work permits
- organisational workplace requirements, including:
  - generation power systems
  - electrical safety
  - isolation and restoration switching schedules
- generation power systems, including:

  - balance of plant
  - piping and instrument diagrams
  - control and switch rooms
  - electrical switchgear
  - electrical protection
- generation power system isolation and restoration, including:
  - generation permit to work
  - lock out, tag out (LOTO)
  - authorisations
- generation power system testing, including:
  - electricity network voltages
  - commissioning
- safe use, care and storage of electrical instruments
- fault loop impedance, including:
  - term fault loop impedance of an alternating current (a.c.) power system
  - measuring fault loop impedance of typical circuits
  - procedures for testing fault loop impedance
- single phase systems
- multi-phase systems
- impedance in a.c. circuits
- documentation and reports, including:
  - work records
  - tests and commissions
  - incidents and unplanned events
  - periodic inspections
  - non-compliance and defects
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy

requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used for maintaining, testing and verifying generation power systems, network apparatus and network electrical circuits in a very remote community
- applicable documentation, including workplace requirements, network construction standards, network supply standards, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRC006 Perform low voltage electricity network switching in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform low voltage (LV) electricity network switching in a very remote community in the electricity supply industry (ESI).

It includes preparing a switching schedule, isolating and restoring LV overhead and underground electricity networks to a given switching schedule using LV circuit breaking and isolation devices.

It also includes paralleling LV electrical network circuits, using specialist tools, personal protective equipment (PPE), earthing and testing equipment, and the use of work permits and authorisation protocols.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform LV electricity network switching	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed and control measures identified and applied
	1.4 Plant, tools, equipment and PPE required for work are determined, obtained and confirmed in working order
	1.5 Switching schedule is developed in accordance with work plan and workplace requirements
	1.6 LV network switching is prioritised for completion in accordance with workplace requirements
	1.7 LV network switching schedule is communicated with relevant personnel in accordance with workplace requirements
2 Perform isolation of LV electricity network	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Authorisation is obtained to commence LV electricity network switching in accordance with switching schedule and workplace requirements
	2.3 Lifting, climbing, working at heights and the use of plant, tools and equipment are carried out in accordance with workplace requirements
	2.4 Hazard control measures are monitored in accordance with workplace requirements
	2.5 LV electricity network is isolated in accordance with switching schedule
	2.6 Communications are maintained with authorisation authority in accordance with workplace requirements

	2.7	LV electricity network is tested to confirm de-energised and earthed/short circuited in accordance with switching schedule and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Work permits are received and signed in accordance with workplace requirements
	2.10	Authorisation authority is notified isolation is completed in accordance with switching schedule and workplace requirements
3 Perform restoration of LV electricity network	**3.1**	Work permits are signed off in accordance with switching schedule and workplace requirements
	3.2	Authorisation is obtained to commence restoration of LV electricity network in accordance with workplace requirements
	3.3	Lifting, climbing, working at heights and the use of plant, tools and equipment, are carried out in accordance with workplace requirements
	3.4	Restore LV electricity network in accordance with switching schedule
	3.5	Authorisation authority is notified restoration is completed in accordance with switching schedule and workplace requirements
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS35 Perform remote community network field switching to a given schedule.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRC006 Perform low voltage electricity network switching in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - relevant work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- preparing a low voltage (LV) electricity network switching schedule in accordance with workplace requirements
- obtaining authorisation to perform LV electricity network switching
- isolating and restoring LV electricity networks in accordance with switching schedule requirements
- undertaking tests of LV electricity network, including:
  - voltage
  - phase sequence (rotation)
  - polarity
- operating LV switchgear, including at least one (1) of the following:
  - LV circuit breaker
  - LV links
  - LV fuses
- working from at least one (1) of the following:
  - elevated work platform (EWP)
  - ladder
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- requirements for the use of manuals, system diagrams/plans and drawings, including:
  - types, characteristics and capabilities of electrical apparatus
  - use, characteristics and capabilities of specialised tools and testing equipment
  - restrictions pertaining to LV switching equipment
  - high voltage (HV) network interconnectors source of possible back-feed
- LV switchgear, including:
  - types
  - categories
  - application
  - function
  - operating capabilities
- types, characteristics and capabilities of LV specialised switching and testing equipment
- procedures for obtaining correct LV switching authorisation, including:
  - identification of hazards, assessing and controlling risks
  - safety procedures and precautions
  - safe approach distances
  - responsibilities and protocols
  - identifying switching resources
  - procedures for obtaining electrical access permits/authorities
  - requirements for team switching
  - procedures for coordination of operations
- techniques for overhead and underground LV electricity network switching, including:
  - isolation procedures
  - testing and earthing/short circuiting LV electrical apparatus
  - pre-switching checks
  - switching operational procedures
  - emergency fault procedures
  - restoration procedures
- role and responsibilities of the LV switching operator

- application, function and operating capabilities of switchgear
- preparation of a LV switching schedule, including:
  - legislation, standards, codes, supply authority regulations and/or enterprise requirements applicable to switching sheet schedules
  - requirements for the use of manuals, system diagrams/plans and drawings - types, characteristics and capabilities of LV electrical equipment to be switched; isolation points and earthing; and responsibilities of the switching operator
  - techniques in writing switching schedules - sequence of switching operations, isolation procedures, earthing procedures and switching completion notification procedures
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for performing LV electricity network switching in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to solve electrical network apparatus problems in a very remote community in the electricity supply industry (ESI).

It includes determining correct operation of network apparatus and related circuits, providing solutions as they apply to the electrical network and documenting problem-solving activities.

It also includes safe working practices, network apparatus problem-solving processes, including the use of voltage, current and resistance measuring devices, diagnosing and providing solutions derived from test analysis to solve problems in network apparatus and related circuits.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to solve electrical network apparatus problems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment, and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed, and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
	1.9 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Solve electrical network apparatus problems	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Live testing or measuring requirements are determined in accordance with workplace requirements
	2.5 Electrical network circuits are confirmed as isolated and earthed/short circuited in accordance with workplace requirements
	2.6 Operating parameters of the circuit within the electrical network apparatus are verified in accordance with workplace requirements
	2.7 Established methodical processes are used to identify electrical problems from measured and calculated values in accordance with workplace requirements
	2.8 Electrical network apparatus circuit problems are solved without damage to apparatus or circuits to comply with workplace requirements
	2.9 Earthing/short circuiting equipment is removed, permit signed off and electrical network circuits re-energised in accordance with workplace requirements
	2.10 Electrical network apparatus is tested to determine correct operation in accordance with workplace requirements
	2.11 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.12 Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.3 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.4 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.5 Incidents or unplanned events are reported in accordance with workplace requirements

3.6 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS32 Solve electrical problems in remote community network apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRC007 Solve problems in electrical network apparatus in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- preparing to enter the workplace, including the use of work permits, clearances and isolation permissions
- confirming network electrical apparatus circuit is isolated
- determining the operating parameters of a circuit within the electrical network apparatus
- using established methodical processes to solve electrical problems in accordance with workplace requirements, including:
  - choosing correct instruments and ranges for testing and measuring values
  - connecting instruments to measure and calculate values in circuits within the electrical network apparatus
- identifying at least three (3) of the following problems:
  - high voltage (HV)/low voltage (LV)
  - high resistance
  - low resistance
  - fault current (fuses)
  - kilowatt hour meter faults (no supply, reverse polarity etc)
  - public lighting faults
- working from at least one (1) of the following:
  - elevated work platform (EWP)
  - platform
  - ladder
- connecting and testing electrical network apparatus to determine correct operation
- dealing with an unplanned event on at least one (1) occasion

- completing relevant work records, reporting and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - wiring rules requirements – continuity test and insulation resistance test
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- safe use, care and storage of electrical instruments
- parallel circuits, including:
  - schematic diagram of a single-source direct current (d.c.) parallel circuit
  - major components of a parallel circuit (power supply, loads, connecting leads and switch)
  - applications where parallel circuits are used in the remote community electricity supply industry (ESI)
  - characteristics of a parallel circuit (load connection, current paths, voltage drops, power dissipation, and effects of an open circuit in a parallel circuit)
  - relationship between currents entering a junction and currents leaving a junction
  - calculation of the total resistance of a parallel circuit
  - calculation of the total current of a parallel circuit
  - calculation of the total voltage of a parallel circuit
  - single-source d.c. parallel circuit set-up and connection
  - resistance, voltage and current measurements in a single-source parallel circuit
  - voltage, current, resistance or power dissipated from measured values of any of these quantities
- series/parallel circuits, including:
  - schematic diagram of a single-source d.c. series/parallel circuit
  - major components of a series/parallel circuit (power supply, loads, connecting leads and switch)
  - applications where series/parallel circuits are used in the remote community ESI
  - characteristics of a series/parallel circuit (load connection, current paths, voltage drops, power dissipation, and effects of an open circuit in a series/parallel circuit)
  - calculation of the total resistance of a series/parallel circuit
  - calculation of the total current of a series/parallel circuit
  - calculation of the total voltage and the individual voltage drops of a series/parallel circuit
  - setting up and connecting a single-source d.c. series/parallel circuit

  - resistance, voltage and current measurements in a single-source d.c. series/parallel circuit
  - voltage, current, resistances or power dissipated from measured values of any two of these quantities
- factors affecting resistance, including:
  - four factors that affect the resistance of a conductor (type of material, length, cross-sectional area and temperature)
  - affect the change in the type of material (resistivity) has on the resistance of a conductor
  - effect the change in length has on the resistance of a conductor
  - effect the change in cross-sectional area has on the resistance of a conductor
  - effects of temperature change on the resistance of various conducting materials
  - effects of resistance on the current-carrying capacity and voltage drop in cables
- effects of meters in a circuit, including:
  - meters in terms of units to be measured, range, loading effect, accuracy and safety category of meters for a given application
  - instruments used in the field to measure voltage and current, and the typical circumstances in which they are used
  - hazards involved in using electrical instruments and the safety control measures that should be taken
  - operating characteristics of analogue and digital meters
  - correct techniques to read the scale of an analogue meters and how to reduce the 'parallax' error
  - types of voltmeters used in the ESI – bench type, clamp meter and multimeter
  - purpose and characteristics (internal resistance, range, loading effect and accuracy) of a voltmeter
  - types of voltage indicator testers (e.g., light-emitting diode (LED), neon, solenoid, volt-stick and series tester) and the purpose of each voltage indicator tester
  - various types of ammeters used in the ESI (bench, clamp meter and multimeter)
  - purpose and characteristics of an ammeter and the correct connection (series) of an ammeter into a circuit
  - loading effect of various voltmeters when measuring voltage across various loads
- resistance measurement, including:
  - identification of instruments used in the field to measure resistance (including insulation resistance (IR)) and the typical circumstances in which they are used
  - purpose of an IR tester
  - parts and functions of various analogue and digital IR tester (selector range switch, zero ohms adjustment, battery check function, scale and connecting leads)
  - reasons why the supply must be isolated prior to using the IR tester
  - where and why the continuity test would be used in an ESI systems
  - where and why the insulation resistance test would be used in an ESI system
  - voltage ranges of an IR tester and where each range may be used. e.g. 250 V d.c, 500 V d.c & 1000 V d.c
  - IR tester calibration requirements

  - measurement of low values of resistance using an IR tester continuity functions
  - measurement of high values of resistance using an IR tester insulation resistance function
  - volt-ammeter (short shunt and long shunt) methods of measuring resistance
  - calculation of resistance values using voltmeter and ammeter reading (long and short shunt connections)
- capacitors and capacitance, including:
  - basic construction of standard capacitor, highlighting the plates, dielectric and connecting leads
  - types of dielectric material and each dielectric's relative permittivity
  - identification of various types of capacitors commonly used in the ESI
  - circuit symbol of various types of capacitors - standard; variable, trimmer and polarised
  - terms: capacitance (C), electric charge (Q) and energy (W)
  - unit of capacitance (Farad), electric charge (Coulomb) and energy (Joule)
  - factors affecting capacitance and how factors are present in all circuits to some extent
  - how a capacitor is charged in a d.c. circuit
  - behaviour of a series d.c. circuit containing resistance and capacitance components - charge and discharge curves
  - term: time constant and its relationship to the charging and discharging of a capacitor
  - calculation of quantities from given information - capacitance (Q = VC); energy (W =½CV2); voltage (V = Q/C)
  - connection of a series d.c. circuit containing capacitance and resistor to determine the time constant of the circuit
- capacitors, including:
  - hazards involved in working with capacitance effects and the safety control measures that should be taken
  - safe handling and the correct methods of discharging various size capacitors
  - dangers of a charged capacitor and the consequences of discharging a capacitor through a person
  - effects of capacitors connected in parallel
  - effects on the total capacitance of capacitors connected in series
  - common faults in capacitors
  - testing of capacitors to determine serviceability
  - application of capacitors in the ESI
- magnetism, including:
  - magnetic field pattern of bar and horse-shoe magnets
  - magnets attraction and repulsion when brought in contact with each other
  - common magnetic and non-magnetic materials and groupings (diamagnetic, paramagnetic and ferromagnetic materials)
  - principle of magnetic screening (shielding) and its applications
  - practical applications of magnets
- electromagnetism, including:

- conventions representing direction of current flow in a conductor
- magnetic field pattern around a single conductor and two adjacent conductors carrying current
- right hand rule to determine the direction of magnetic field around a current-carrying conductor
- direction of force between adjacent current-carrying conductors
- effect of current, length and distance apart on the force between conductors (including forces on bus bars during fault conditions)
- magnetic field around an electromagnet
- right hand rule to determine the direction of magnetic field around a current-carrying coil
- magnetomotive force (m.m.f.) and its relationship to the number of turns in a coil and the current flowing in the coil
- practical applications of electromagnets

- electromagnetic induction, including:
  - principle of electromagnetic induction (Faraday's law of electromagnetic induction)
  - Fleming's right hand rule to a current-carrying conductor under the influence of a magnetic field
  - calculation of induced electromagnetic force (e.m.f). in a conductor given the conductor length, flux density and velocity of the conductor
  - calculation of induced e.m.f. in a coil given the number of turns in a coil and the rate of change of flux
  - calculation of force on a conductor given the flux density of the magnetic field, length of the conductor and the current being carried by the conductor
  - Lenz's law
  - applications of electromagnetic induction
- inductance, including:
  - construction of an inductor, including a bifilar winding inductor
  - Australian Standard circuit diagram symbol for the four types of inductor
  - effect of physical parameters on the inductance of an inductor
  - common types of inductor cores
  - applications of the different types of inductors
  - definition of terms self-induction, inductance and mutual inductance
  - calculation of value of self-induced e.m.f. in a coil
  - mutual induction occurs between two coils
  - practical applications for the effects of self and mutual induction
  - undesirable effects of self and mutual induction
- magnetic devices, including:
  - construction, operation and applications of relays
  - construction, operation and applications of contactors
  - magnetic methods used to extinguish the arc between opening contacts
  - construction, operation and applications of Hall effect devices

- construction, operation and application of magnetic sensing devices
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for solving problems in electrical network apparatus in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to solve problems in low voltage (LV) electrical network circuits in a very remote community in the electricity supply industry (ESI).

It includes establishing correct operation of single and multi-phase LV electrical network circuits and solving circuit problems as they apply to servicing, fault-finding and installation work function.

It also includes safe working practices, issues related to fault protection, power factor and multiple earthed neutral (MEN) systems and the use of voltage, current and resistance measuring devices to provide solutions to LV electrical network circuit problems derived from calculated and measured parameters.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRRC006 Perform low voltage electricity network switching in a very remote community

UETDRRC007 Solve problems in electrical network apparatus in a very remote community

Competency Field

Remote Community

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to solve problems in LV electrical network circuits	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment, and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
	1.9 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Solve problems in LV electrical network circuits	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, climbing, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

2.3 Hazard control measures are monitored in accordance with workplace requirements

2.4 Live testing or measuring requirements are determined in accordance with workplace requirements

2.5 Electrical network circuits are confirmed as isolated and proved earthed/short circuited in accordance with workplace requirements

2.6 Operating parameters of the network electrical circuits are verified in accordance with workplace requirements

2.7 Established methodical processes are used to identify electrical network circuit problems from measured and calculated values in accordance with workplace requirements

2.8 Electrical network circuit problems are solved without damage to apparatus or circuits to comply with workplace requirements

2.9 Earthing/short circuiting equipment is removed, permit signed off and electrical network circuits re-energised in accordance with workplace requirements

2.10 Electrical network circuits are tested to determine correct operation in accordance with workplace requirements

2.11 Incidents or unplanned events are responded to in accordance with workplace requirements

3 Complete work and documentation

3.1 Completed work is checked for compliance against the work plan and workplace requirements

3.2 Worksite is rehabilitated, cleaned and made safe in accordance with workplace procedures

3.3 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.4 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.5 Incidents or unplanned events are reported in accordance with workplace requirements

3.6 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with

workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRIS33 Solve electrical problems in remote community network systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRC008 Solve problems in low voltage electrical network circuits in a very remote community

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- preparing to enter the workplace, including the use of work permits, clearances and isolation permissions
- confirming network electrical circuits are isolated
- determining the correct operation of the network electrical circuits
- using established methodical processes to solve electrical problems in accordance with workplace requirements, including:
  - choosing correct instruments and ranges for testing and measuring values
  - connecting instruments to measure and calculate values in circuits within the electrical network
- identifying circuit problems, including at least three (3) of the following:
  - high voltage (HV)/low voltage (LV)
  - high resistance
  - low resistance
  - fault current (fuses)
  - kilowatt hour meter faults (no supply, reverse polarity, etc)
  - streetlight faults
- connecting and testing network electrical circuits to determine correct operation
- working from at least one (1) of the following:
  - elevated work platform (EWP)
  - platform
  - ladder

- dealing with an unplanned event on at least (1) one occasion
- completing relevant work records, reporting and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - wiring rules requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- alternating current (a.c.) quantities, including:
  - sine, cosine and tangent ratios of a right-angle triangle
  - Pythagoras theorem to a right-angle triangle
  - use of the cathode ray oscilloscope (CRO) to measure direct current (d.c.) and a.c. voltage levels
  - sinusoidal voltage generated by a single turn coil rotated in uniform magnetic fields
  - terms ‘period’, ‘maximum value’, ‘peak-to-peak value’, ‘instantaneous value’, ‘average value’, and ‘root-mean-square (r.m.s.) value’, in relation to a sinusoidal waveform
  - calculation of the instantaneous value of induced voltage of a generated sinusoidal waveform
  - measurement of instantaneous, peak and peak-to-peak values and the period of a sinusoidal waveform
  - calculation of r.m.s. value and frequency of a sinusoidal waveform from values of peak voltage and period
- phasor diagrams, including:
  - purpose of phasor diagrams
  - ‘in-phase’, ‘out-of-phase’, ‘phase angle’ ‘lead’ and ‘lag’
  - phase angle between two or more alternating quantities from a given sinusoidal waveform diagram
  - convention for representing voltage, current and the reference quantity in a phasor diagram
  - drawing phasor diagrams to show the relationship between two or more a.c. values of voltage and/or current
  - determination of phase relationship between two or more sinusoidal waveforms from a given diagram and measurements
- single element a.c. circuits, including:
  - setting up and connecting a single-source resistive a.c. circuit and taking voltage and current measurements to determine the resistance
  - determining the voltage, current resistances from the measurement of given values of any

two of these qualities
    - relationship between voltage drops and current in resistive a.c. circuits
    - applications of resistive a.c. circuits
    - defining 'inductive reactance'
    - calculation of inductive reactance for a given inductor and the relationship between inductive reactance and frequency
    - application of Ohm's law to determine voltage, current of inductive reactance in a purely inductive a.c. circuit given any two to these quantities
    - applications of inductive a.c circuits
    - calculation of capacitive reactance
    - application of Ohm's law to determine voltage, current or capacitive reactance in a purely capacitive a.c circuit given any two of the quantities
    - applications of capacitive a.c circuits
- impedance a.c. circuits, including:
    - impedance and impedance triangle
    - effects of impedance on the neutral and active conductor
    - determining the impedance, current and voltages for a series a.c circuit
    - drawing and labelling the impedance triangle for a series resistor–capacitor (RC) circuit
    - capacitive components in power circuits and systems and the effect on the phase relationship between voltage and current
    - drawing the equivalent circuit of a practical inductor
    - inductive components in power circuits and systems and their effect on the phase relationship between voltage and current
- power in an a.c. circuit, including:
    - difference between true power, apparent power and reactive power and the units in which these quantities are measured
    - power triangle to show the relationships between true power, apparent power and reactive power
    - terms: power factor and phase angle
    - methods used to measure single phase power, energy and demand
- power factor improvement, including:
    - effects of low power factor
    - requirements for power factor improvement
    - methods used to improve low power factor of an installation
    - local supply authority and wiring rules requirements regarding the power factor of an installation and power factor improvement equipment
- harmonics effect in a.c. systems, including:
    - term harmonic in relation to the sinusoidal waveform of an a.c. power system
    - sources in a.c. systems that produce harmonics
    - problems that may arise in a.c. circuits as a result of harmonics and how these are overcome

    - methods and test equipment used to test for harmonics
- multi-phase systems, including:
    - features of a multiphase system
    - two-phase systems (230 V/460 V)
    - comparison of voltages generated by single and multi-phase alternators
    - reasons for the adoption of three phases for power systems
    - how three phases are generated in a single alternator
    - calculation of root mean square (r.m.s.) value of voltage generated in each phase given the maximum value
    - relationship between the phase voltages generated in a multi-phase alternator and the conventions for identifying each
    - term phase sequence (also referred to as phase rotation)
    - phase sequence of a multi-phase supply
- single phase systems
- three phase star-connections, including:
    - connecting a three phase star-connection load
    - phase relationship between line and phase voltages and line and phase currents of a star-connected system
    - determining the r.m.s. value of line and phase voltage given any one of these quantities
    - determining the r.m.s. value of line and phase current given any one of these quantities
    - terms balanced load and unbalanced load
    - balanced and unbalanced loads in typical power systems
- three phase four wire systems, including:
    - purpose of the neutral conductor in three phase four wire systems
    - the effects of a high impedance in the neutral conductor of a three phase four wire system supplying an unbalanced load where multiple earthed neutral (MEN) earthing is employed
- three phase delta-connections and interconnected systems, including:
    - connecting three phase delta loads
    - phase relationship between line and phase voltages and line and phase currents of a delta-connected system
    - determining the r.m.s. value of line and phase voltage given any one of these quantities
    - determining the r.m.s. value of line and phase current given any one of these quantities
    - limitations and uses of open delta connections
    - loads in typical power systems
    - typical combinations of three phase interconnected systems using star-connections and a delta connection
    - relationship between line and phase voltages and line and phase currents in the typical interconnected systems using star-connections and delta connections
- fault loop impedance, including:
    - term fault loop impedance of an a.c. power system

    - measuring fault loop impedance of typical circuits
    - procedures for testing fault loop impedance
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for solving electrical problems in low voltage network circuits in a very remote community
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT001 Install overhead rail traction configurations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install overhead rail traction configurations in the electricity supply industry (ESI).

It includes installation of overlaps, cross-overs, turnouts and crossing configurations by using safe working practices on or about the running line/track identifying and confirming road/rail management plans and electrical permits.

It includes inspecting and checking to confirm configurations have been correctly installed in accordance with design and is fit for service, updating installation data and relevant quality assurance documentation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT002 Install overhead traction components and equipment

UETDRRT004 Install traction overhead wiring systems

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for installation of overhead traction configurations	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Required design standards and construction plans are obtained
	1.3 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.8 Environmental constraints applicable to the work are identified and control measures applied
2 Perform installation of overhead traction configurations	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored

	2.2 Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5 Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6 Electrical equipment and associated hardware are positioned, secured and terminated/connected in accordance with job and workplace requirements
	2.7 Overhead traction configurations are installed in agreed timeframes, to design standards and with a minimum of waste in accordance with workplace requirements
	2.8 Profiling is checked in accordance with workplace requirements
	2.9 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.10 Quality checks of work are undertaken in accordance with workplace requirements to ensure fit for service
3 Complete work and documentation	**3.1** Completed work is checked against design standards, construction plans and drawings for compliance and anomalies reported in accordance with workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements
	3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4 Plant, tools and equipment are cleaned, checked, and returned to storage in accordance with workplace requirements
	3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.6 Work permits are completed and overhead traction configuration is fit for service in accordance with workplace requirements

3.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT25 Install overhead rail traction configurations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT001 Install overhead rail traction configurations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing at least three (3) of the following types of system configurations:
  - overlaps
  - cross-overs
  - turnout crossings
  - train/tram crossings
- operating from at least one (1) of the following types of mobile plant and height equipment:
  - elevated work platform (EWP)
  - ladder
  - mobile platform
- using equipment and tools required for installing overhead rail traction configurations, including:
  - cant gauge
  - height and stagger gauge
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:

  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- traction configuration design standards and construction plans, including:
  - types
  - purpose
  - assemblies
  - components
- installation of traction configurations, including:
  - installation methods
  - measurement of tolerances
  - recording of tolerances
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment, plant and PPE currently used in industry for installing overhead rail traction configurations
- applicable documentation, including workplace requirements, relevant design standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT002 Install overhead traction components and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install overhead traction components and equipment in the electricity supply industry (ESI).

It includes installing hardware whilst undertaking safe working practices on or about the running line/track, identifying and confirming road/rail management plans and electrical permits.

It also includes inspecting and checking to confirm equipment, components and hardware have been correctly installed in accordance with design, ensuring traction system is fit for service and updating installation data and relevant quality assurance documentation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for installation of overhead traction equipment or components	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Required design standards and construction plans are obtained
	1.3 Plant, tools, equipment, components and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.8 Environmental constraints applicable to the work are identified and control measures applied
2 Perform installation of overhead traction equipment or components	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with

		workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5	Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6	Electrical components or equipment and associated hardware are positioned, secured and terminated or connected in accordance with job and workplace requirements
	2.7	Overhead traction equipment or components are installed within agreed timeframes, to design standards in accordance with job and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken, and anomalies recorded and adjusted in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked against design standards, construction plans and drawings for compliance and anomalies reported in accordance with workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked, and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are completed and overhead traction equipment or components are fit for service in accordance with workplace requirements

3.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT27 Install overhead traction components and equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT002 Install overhead traction components and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing at least two (2) of the following types of equipment:
  - fuse switches
  - dropout fuses
  - section insulators
  - neutral sections
  - switches/isolators
  - links
  - fuses
  - surge diverters
  - transformers
- installing at least five (5) of the following types of components:
  - cantilever hardware
  - insulators
  - head span
  - pull-offs
  - push-offs
  - registration fittings
  - steady span
  - tension regulators
  - cross spans
  - tramway support network

  - pendulum
  - rigid rail conductor
- installing at least two (2) of the following types of fittings:
  - preformed fittings
  - compression fittings
  - wedge fittings
  - bolted splices
  - fork collar sockets
  - conical splices
- installing at least three (3) of the following types of connecting components:
  - feeders (drops, cross track)
  - dissimilar conductors
  - lugs
  - bolted clamp
  - drapes/potential jumper
  - droppers
- using at least two (2) of the following required for installing overhead traction components and equipment:
  - voltage detectors
  - micrometer/gauge
  - tension wrench
  - dynamometer
  - specialised tools
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- types and purpose of overhead traction equipment, including:
  - switches/isolators
  - fuse switches

    - dropout fuses
    - links
    - section insulators
    - neutral sections
    - surge diverters
    - transformers
    - fuses
- types and purpose of overhead components, including:
    - cantilever hardware
    - droppers
    - span or bay components
    - portal hardware
    - head span hardware
    - section insulators
    - neutral sections
    - registration fittings
    - steady span
    - tension regulators
    - cross spans
    - low clearance components
- types of conductors used for overhead wiring, including:
    - copper hard-drawn
    - copper cadmium
    - copper tin-bearing
    - aluminium
    - steel
    - other alloyed conductors
    - rigid rail conductor
- types of traction wire support structures, including:
    - portals
    - cantilevers
    - twin track cantilevers
    - drop vertical
    - head spans
    - cross spans
    - pull-offs
    - push-offs
- types and purpose of ancillary equipment, including:
    - surge arresters

  - booster
  - auxiliary transformers
- methods for installing conductors, including:
  - preformed fittings
  - compression fittings
  - wedged fittings
  - bolted splices
  - lugs
  - bolted clamps
  - fork collar sockets
  - conical splices
- methods for installing components, including:
  - feeders (drops, cross track)
  - droppers
  - dissimilar conductors
  - jumpers
  - surge arresters
- use of plant and equipment for installation work, including:
  - elevated work platforms (EWP)
  - ladders
  - works trains
  - rail-mounted overhead wiring equipment/vehicles
  - road/rail height access machinery/vehicles
  - voltage detectors
  - micrometer/gauges
  - tension wrenches
  - dynamometers
  - other specialised tools
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic

and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, plant, equipment and PPE currently used in industry for installing overhead traction components and equipment
- applicable documentation, including workplace requirements, relevant design standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT003 Install rail traction bonds

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install rail traction bonds in the electricity supply industry (ESI).

It includes the preparation and installation of temporary and permanent traction bonds, bonding cables, bonding equipment and hardware whilst undertaking safe working practices on or about the running line/track, identifying and confirming road/rail management plans and electrical permits.

It also includes checks to confirm bonds, bonding cables, bonding equipment and hardware have been correctly installed in accordance with design, ensuring traction bonding is fit for service, and installation data and relevant quality assurance documentation is completed.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT002 Install overhead traction components and equipment

UETDRRT004 Install traction overhead wiring systems

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install traction bonds	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Required design standards and construction plans are obtained
	1.3 Plant, tools, equipment, conductors and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.8 Environmental constraints applicable to the work are identified and control measures applied
2 Perform installation of traction bonds	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

		be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5	Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6	Cable and surrounds, including rail and other surfaces, are prepared for jointing and terminating in accordance with workplace requirements
	2.7	Traction bonds and bonding cables are installed and tested in agreed timeframes, to design standards and with minimum waste in accordance with workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with workplace requirements to ensure fit for service
3 Complete work and documentation	**3.1**	Completed work is checked against design standards, construction plans and drawings for compliance and anomalies reported in accordance with workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked, and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are completed, and overhead traction

bonding is fit for service in accordance with workplace requirements

3.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT23 Install rail traction bonds.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT003 Install rail traction bonds

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing at least two (2) of the following types of connecting bond cables and components:
  - covered or bare aluminium bonds
  - copper bonds
  - steel bonds
  - steel rail
- using at least three (3) of the following types of equipment, tools and testers required for installing rail traction bonds:
  - bonding specific tools
  - crimping devices
  - thermal moulds
  - rail drill
  - bonding fittings
  - explosive power tools
  - meter or tester
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace

requirements, including:

  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- traction bond and cables, including:
  - permanent bonding preparation and installation methods
  - applications for permanent bonding
  - components of permanent bonds
  - interface between traction and signalling circuits
- safe working procedures/practices when carrying out permanent bonding, including:
  - PPE
  - electrical and visual testing of the PPE
- installation of temporary traction bonds and cables, including:
  - types and purpose of tools and equipment
  - installation and removal methods
  - testing for electrical integrity of bonds and cables
- installation of permanent traction bonds and cables, including:
  - types and purposes of tools and equipment
  - installation and removal methods
  - testing for electrical integrity of bond, cables and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing rail traction bonds

- applicable documentation, including workplace requirements, relevant design standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT004 Install traction overhead wiring systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install traction overhead wiring systems in the electricity supply industry (ESI).

It includes installing associated conductors whilst undertaking safe working practices on or about the running line/track, identifying and confirming road/rail management plans and electrical permits.

It also includes inspecting and checking to confirm conductors and hardware have been correctly installed in accordance with design, ensuring traction system is fit for service and updating installation data and relevant quality assurance documentation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT002 Install overhead traction components and equipment

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install overhead traction wiring systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Required design standards and construction plans are obtained
	1.3 Plant, tools, equipment, conductors and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.8 Environmental constraints applicable to the work are identified and control measures applied
2 Installation of overhead traction wiring systems	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with

		workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5	Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6	Overhead traction wiring systems, including cables, fittings, traction conductors and associated equipment, are installed in accordance with job and workplace requirements
	2.7	Overhead traction wiring systems is installed and completed in agreed timeframes, to design standards and with minimum waste in accordance with workplace requirements
	2.8	Profiling is checked in accordance with workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.10	Quality checks of work are undertaken in accordance with workplace requirements to ensure fit for service
3 Complete work and documentation	**3.1**	Completed work is checked against design standards, construction plans and drawings for compliance and anomalies reported in accordance with workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked, and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are completed, and overhead traction

equipment or components are fit for service in accordance with workplace requirements

3.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT21 Install traction overhead wiring systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT004 Install traction overhead wiring systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing at least four (4) of the following types of system equipment and fittings:
  - support structure
  - span
  - section insulator
  - neutral section
  - droppers
  - support equipment
  - tension regulators
  - stay/guy wire
  - tramway support network
- installing at least two (2) of the following traction conductors and cables:
  - contact/trolley*
  - catenary
  - feeder
  - midpoint anchor
  - earth conductor
  - return conductor
  - drape/potential jumper
  - (*must do)
- operating from at least one (1) of the following types of mobile plant and height equipment:
  - elevated work platform (EWP)

  - ladder
  - mobile platform
- using at least two (2) of the following equipment and tools required for overhead rail traction wiring systems:
  - tensioning equipment*
  - specialised tools
  - electrical testing equipment
  - geometry profiling equipment
  - (*must do)
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- methods for running wire systems or conductors
- electrical wiring system components, including:
  - earth wires
  - feeder wire
  - catenary wire
  - contact/trolley wire
  - return conductor
  - insulators
  - surge arresters
  - cantilevers
  - droppers
  - tensioning equipment
  - current collectors
  - tram support network
  - tram fittings
  - low clearance components
- types of electrical traction systems, including:

  - auto-tensioning
  - spring loaded tension
  - balance weight anchor (BWA)
  - fixed tension
- relationship of the components, apparatus and the conductors to the operation of the traction system
- effective current collection and wire interface
- effective registration in the traction power system
- methods of profiling overhead traction wire, including:
  - factors that impact on current collectors to achieve smooth current collector transitions and interfaces
- dynamic and static forces, including:
  - types that effect traction systems
  - techniques to minimise the adverse effects
- standards, codes, legislation, supply authority regulations and workplace requirements applicable to electrical traction
- electrical traction voltage and current circuit paths, including:
  - transmission and distribution voltages
  - traction supply system and voltages
  - return and stray current paths, including electrolysis
- relationship of sectioning, section insulator and overlaps/air gaps in a traction power system
- traction power system components, including:
  - function of transformer/rectifiers
  - configuration and purpose of traction overhead wiring systems
  - function of isolators/switches
  - function of the circuit breaker
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment, plant and PPE currently used in industry for installing traction overhead wiring systems
- applicable documentation, including workplace requirements, relevant design standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT008 Maintain overhead rail traction configurations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain overhead rail traction configurations in the electricity supply industry (ESI).

It includes repairing or adjusting overlaps, cross-overs, turnouts and crossings configurations, undertaking safe working practices on or about the running line/track, identifying and confirming road/rail management plans, and electrical permits.

It also includes inspecting, diagnosing faults of traction configurations ensuring they are fit for service within normal parameters, including updating of maintenance records.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT001 Install overhead rail traction configurations

UETDRRT002 Install overhead traction components and equipment

UETDRRT004 Install traction overhead wiring systems

UETDRRT009 Maintain overhead traction components and equipment

UETDRRT011 Maintain traction overhead wiring systems

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain overhead traction configurations	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Relevant maintenance documents are identified and obtained
	1.3 Plant, tools, equipment, conductors and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.8 Environmental constraints applicable to the work are identified and control measures applied

2 Perform maintenance of overhead traction configurations	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5 Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6 Configurations are maintained, including adjustment, modification, repair or replacement in accordance with job and workplace requirements
	2.7 Configurations are maintained and completed in agreed timeframes, to design standards or maintenance documents in accordance with workplace requirements
	2.8 Profiling is checked in accordance with workplace requirements
	2.9 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.10 Quality checks of work are undertaken in accordance with workplace requirements to ensure fit for service
3 Complete work and documentation	**3.1** Completed work is checked against maintenance documents for compliance and anomalies reported in accordance with workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements
	3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4 Plant, tools and equipment are cleaned, checked, and returned to storage in accordance with workplace requirements

3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements

3.6 Work permits are completed, and rail traction configurations are fit for service in accordance with workplace requirements

3.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT26 Maintain overhead rail traction configurations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT008 Maintain overhead rail traction configurations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- maintaining at least three (3) of the following types of system configurations:
  - overlap
  - cross-over
  - turnout crossings
  - train/tram crossing
- using at least one (1) of the following types of mobile plant and height equipment:
  - elevated work platform (EWP)
  - mobile platforms
  - ladder
- using equipment and tools required for maintaining overhead rail traction configurations, including:
  - cant gauge
  - height and stagger gauge
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:

    - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- traction configuration maintenance documents
- maintenance of traction configurations, including:
    - types of components
    - maintenance/repair procedures
    - inspection and recording procedures
- diagnosis and correction of simple faults in specific traction configurations, including:
    - types and causes
    - determination of appropriate corrective actions
    - repair and replace procedures for components of specific configurations
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment, plant and PPE currently used in industry for maintaining overhead rail traction configurations
- applicable documentation, including workplace requirements, maintenance documents, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT009 Maintain overhead traction components and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain or repair overhead traction equipment, components and hardware in the electricity supply industry (ESI).

It includes repairing or replacing components or equipment and hardware, undertaking safe working practices on or about the running line/track, identifying and confirming road/rail management plans, and electrical permits.

It also includes inspecting and checking equipment, components and hardware are fit for service and are within normal parameters and maintenance records are updated.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT002 Install overhead traction components and equipment

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for maintenance of overhead traction equipment or components	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Relevant maintenance documents are identified and obtained
	1.3 Plant, tools, equipment, components and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.8 Environmental constraints applicable to the work are identified and control measures applied
2 Perform maintenance of overhead traction equipment or components	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with

		workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5	Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6	Overhead traction equipment or components is maintained including repair or replacement in accordance with design standards, drawings and workplace requirements
	2.7	Overhead traction equipment or components are maintained and completed in agreed timeframes, to design standards or maintenance documents in accordance with workplace requirements
	2.8	Components or equipment and hardware are confirmed fit for service in accordance with workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.10	Quality checks of work, including visual inspections, are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked against maintenance documents for compliance and anomalies reported in accordance with workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are completed, and overhead traction

equipment or components are fit for service in accordance with workplace requirements

3.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT28 Maintain overhead traction components and equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT009 Maintain overhead traction components and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- maintaining at least two (2) of the following types of equipment:
  - fuse switches
  - dropout fuses
  - section insulators
  - neutral sections
  - switches/isolators
  - links
  - fuses
  - surge diverters
  - transformers
- maintaining at least five (5) of the following types of components:
  - cantilever hardware
  - insulators
  - head span
  - pull-offs
  - push-offs
  - registration fittings
  - steady span
  - tension regulators
  - cross spans
  - tramway support network

  - pendulum
  - rigid rail conductor
- maintaining at least two (2) of the following types of fittings:
  - preformed fittings
  - compression fittings
  - wedge fittings
  - bolted splices
  - fork collar sockets
  - conical splices
- maintaining at least three (3) of the following types of connecting components:
  - feeders (drops, cross track)
  - dissimilar conductors
  - lugs
  - bolted clamp
  - drapes/potential jumper
  - droppers
- using at least two (2) of the following required for maintaining overhead traction components and equipment:
  - voltage detectors
  - micrometer/gauge
  - tension wrench
  - dynamometer
  - specialised tools
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- overhead traction components and equipment maintenance documents
- types and purpose of overhead traction equipment, including:
  - switches/isolators

  - fuse switches
  - dropout fuses
  - links
  - section insulators
  - neutral sections
  - surge diverters
  - transformers
  - fuses
- types and purpose of overhead components, including:
  - cantilever hardware
  - droppers
  - span or bay components
  - portal hardware
  - head span hardware
  - section insulators
  - neutral sections
  - registration fittings
  - steady span
  - tension regulators
  - cross spans
  - low clearance components
- types of conductors used for overhead wiring, including:
  - copper hard-drawn
  - copper cadmium
  - copper tin-bearing
  - aluminium
  - steel
  - other alloyed conductors
  - rigid rail conductor
- types of traction wire support structures, including:
  - portals
  - cantilevers
  - twin track cantilevers
  - drop vertical
  - head spans
  - cross spans
  - pull-offs
  - push-offs
- types and purpose of ancillary equipment, including:

    - surge arresters
    - booster
    - auxiliary transformers
- methods for replacing conductors, including the use of:
    - preformed fittings
    - compression fittings
    - wedged fittings
    - bolted splices
    - lugs
    - bolted clamps
    - fork collar sockets
    - conical splices
- methods for replacing components, including:
    - feeders (drops, cross track)
    - droppers
    - dissimilar conductors
    - jumpers
    - surge arresters
- use of plant and equipment for maintenance work, including:
    - elevated work platforms (EWPs)
    - ladders
    - works trains
    - rail-mounted overhead wiring equipment/vehicles
    - road/rail height access machinery/vehicles
    - voltage detectors
    - micrometer/gauges
    - tension wrenches
    - dynamometers
    - other specialised tools
- maintenance of overhead traction equipment and components, including:
    - maintenance/repair procedures
    - inspection and recording procedures
- diagnosis and correction of simple faults in specific overhead traction equipment and components, including:
    - types and causes
    - determination of appropriate corrective actions
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, plant, equipment and PPE currently used in industry maintaining overhead traction components and equipment
- applicable documentation, including workplace requirements, maintenance documents, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT010 Maintain rail traction bonds

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain rail traction bonds in the electricity supply industry (ESI).

It includes the maintenance, testing and repair of temporary and permanent traction bonds, bonding cables, bonding equipment and hardware whilst undertaking safe working practices on or about the running line/track, identifying and confirming road/rail management plans and electrical permits.

It also includes checks to confirm bonds, bonding cables, bonding equipment and hardware have been maintained in accordance with maintenance documents, ensuring traction bonding is fit for service, and relevant quality assurance documentation is completed.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT002 Install overhead traction components and equipment

UETDRRT003 Install rail traction bonds

UETDRRT004 Install traction overhead wiring systems

UETDRRT009 Maintain overhead traction components and equipment

UETDRRT011 Maintain traction overhead wiring systems

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for maintenance of traction bonds	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Relevant maintenance documents are identified and obtained
	1.3 Plant, tools, equipment, conductors and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements

	1.8	Environmental constraints applicable to the work are identified and control measures applied
2 Perform maintenance of traction bonds	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5	Cable and surrounds, including rail and other surfaces, are prepared for jointing and terminating in accordance with workplace requirements
	2.6	Maintenance, testing and repair of traction bonds equipment, associated hardware and bonding cables are completed in agreed timeframes, to design standards or maintenance documents and with a minimum of waste in accordance with workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.8	Quality checks of work are undertaken in accordance with workplace requirements to ensure fit for service
3 Complete work and documentation	**3.1**	Completed work is checked against maintenance documents for compliance and anomalies reported in accordance with workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked, and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of

in accordance with workplace requirements

3.6 Work permits are completed and traction bonds are fit for service in accordance with workplace requirements

3.7 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT24 Maintain rail traction bonds.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT010 Maintain rail traction bonds

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- maintaining at least two (2) of the following types of connecting bond cables and components:
  - covered or bare aluminium bonds
  - copper bonds
  - steel bonds
  - steel rail
- using at least three (3) of the following types of equipment, tools and testers required for maintaining rail traction bonds:
  - bonding specific tools
  - crimping devices
  - thermal moulds
  - rail drill
  - bonding fittings
  - explosive power tools
  - meter or tester
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- rail traction bonds maintenance documents
- traction bond and cables, including:
  - temporary and permanent bonding preparation and installation methods
  - applications for temporary and permanent bonding
  - components of temporary and permanent bonds
  - interface between traction and signalling circuits
- safe working procedures/practices when carrying out temporary and permanent bonding, including:
  - PPE
  - electrical and visual testing of the PPE
- maintenance of traction bond, cables and equipment, including:
  - types and components
  - types and function of tools and equipment
  - maintenance/repair procedures
  - inspection and recording procedures
- diagnosis and correction of simple faults in traction bonds, including:
  - types and causes
  - determination of appropriate corrective actions
  - repair and replace procedures
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy

requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for maintaining rail traction bonds
- applicable documentation, including workplace requirements, maintenance documents, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT011 Maintain traction overhead wiring systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain traction overhead wiring systems in the electricity supply industry (ESI).

It includes repairing or replacing wiring systems, undertaking safe working practices on or about the running line/track, identifying and confirming road/rail management plans, and electrical permits.

It also includes inspecting, diagnosing faults of wiring systems ensuring they are fit for service within normal parameters, including updating of maintenance records.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT002 Install overhead traction components and equipment

UETDRRT004 Install traction overhead wiring systems

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain overhead traction wiring systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Relevant maintenance documents are identified and obtained
	1.3 Plant, tools, equipment, materials and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.8 Environmental constraints applicable to the work are identified and control measures applied
2 Perform maintenance on overhead traction wiring systems	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with

		workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5	Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6	Overhead traction wiring systems are maintained, including repairing or replacing, and overhead traction conductors are modified and re-adjusted in accordance with workplace requirements
	2.7	Overhead traction wiring systems are maintained within agreed timeframes, to design standards or maintenance documents in accordance with workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with workplace requirements to ensure fit for service
3 Complete work and documentation	**3.1**	Completed work is checked against maintenance documents for compliance and anomalies reported in accordance with workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked, and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are completed and overhead traction wiring systems are fit for service in accordance with workplace requirements
	3.7	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT22 Maintain traction overhead wiring systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT011 Maintain traction overhead wiring systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- maintaining at least four (4) of the following types of system equipment and fittings:
  - support structure
  - span
  - section insulator
  - neutral section
  - droppers
  - support equipment
  - tension regulators
  - stay/guy wire
  - tramway support network
- maintaining at least two (2) of the following types of traction conductors and cables:
  - contact/trolley*
  - catenary
  - feeder
  - midpoint anchor
  - earth conductor
  - return conductor
  - drape/potential jumper
  - (*must do)
- operating from at least one (1) of the following types of mobile plant and height equipment:
  - elevated work platform (EWP)

  - ladder
  - mobile platform
- using at least two (2) of the following equipment and tools required for overhead rail traction wiring systems:
  - tensioning equipment*
  - specialised tools
  - electrical testing equipment
  - geometry profiling equipment
  - (*must do)
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- application, purpose and types of permits
- safe use of plant, tools and equipment
- traction overhead wiring systems maintenance documents
- methods for running wire systems or conductors
- electrical wiring system components, including:
  - earth wires
  - feeder wire
  - catenary wire
  - contact/trolley wire
  - return conductor
  - insulators
  - surge arresters
  - cantilevers
  - droppers
  - tensioning equipment
  - current collectors
  - tram support network
  - tram fittings
  - low clearance components

- types of electrical traction systems, including:
  - auto-tensioning
  - spring loaded tension
  - balance weight anchor (BWA)
  - fixed tension
- relationship of the components, apparatus and conductors to the operation of the traction system
- effective current collection and wire interface
- effective registration in the traction power system
- methods of profiling overhead traction wire, including:
  - factors that impact on current collectors to achieve smooth current collector transitions and interfaces
- dynamic and static forces, including:
  - types that effect traction systems
  - techniques to minimise adverse effects
- maintenance of overhead traction wiring systems, including:
  - types of equipment and components
  - types and function of tools and equipment
  - maintenance/repair procedures
  - inspection and recording procedures
- diagnosis and correction of simple faults in specific overhead wiring systems, including:
  - types and causes
  - determination of appropriate corrective actions
  - repair and replace procedures for overhead wiring systems
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment, plant and PPE currently used in industry for maintaining traction overhead wiring systems
- applicable documentation, including workplace requirements, maintenance documents, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT012 Operate rail road height access plant near rail traction systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to operate rail road height access plant near rail traction systems in the electricity supply industry (ESI).

It includes operating and using road rail height access plant to install and maintain overhead traction systems. It also includes performing pre-operational inspection, undertaking safe working practices on or about the running line/track, road/rail management plans, relevant permits and post-operational inspection.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to operate road rail height access plant	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Hazards are identified, risks assessed and control measures identified and applied
	1.3 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Work permits are organised in accordance with workplace requirements
	1.5 Pre-operational inspections of plant are performed in accordance with workplace requirements
	1.6 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.7 Environmental constraints applicable to the work are identified and control measures applied
2 Operate road rail height access plant	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5 Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6 Road rail height access plant is operated in accordance with workplace requirements
	2.7 Incidents or unplanned events are responded to in accordance with workplace requirements

3 Conclude operation of road rail height access plant	**3.1** Post-operational inspections of plant are performed, and non-compliances are reported in accordance with workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements
	3.3 Rail road height access plant is cleaned and secured, and packed up for return to storage
	3.4 Work permits are completed in accordance with workplace procedures
	3.5 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT29 Operate rail road traction height access equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT012 Operate rail road height access plant near rail traction systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- conducting pre-operational inspections
- conducting post-operational inspections
- operating at least one (1) of the following:
  - elevated work platform (EWP) in the performance of work associated with rail traction
  - road rail platform vehicle in the performance of work associated with rail traction
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, logbooks, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice, organisational and workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - environmental considerations
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- application, purpose and types of permits
- operator requirements, including:
  - pre-operational inspections

  - post-operational inspections
  - logbook
- road/rail traction height access plant and associated equipment, including:
  - characteristics, capabilities and limitations
  - prestart requirements
  - operation procedure
  - basic problem-solving equipment faults
  - safe working procedures when mechanical failure occurs
  - use of appropriate communication systems
  - isolation procedures
  - operating equipment under live overhead equipment and adjacent to or in the vicinity of live overhead equipment
- procedures for effective road and rail management plans
- emergency procedures in the event of an electrical incident/accident
- emergency procedures in the event of a safe working/road traffic incident/accident
- procedures for rescuing a person from height access plant, including:
  - methods for rescuing a person
  - methods for rescuing a person from a disabled height access plant
  - methods for rescuing an incapacitated person from height access plant
  - methods for rescuing a person in contact with live overhead equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, facilities, road rail height access plant, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT013 Perform rail traction switching operations to a given schedule

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform rail traction switching operations to a given schedule in the electricity supply industry (ESI).

It also includes procedures for communicating with the electrical control officer/system, isolating electrical equipment, proving the area is de-energised and earthed or rail-connected, issuing and cancelling/relinquishing of electrical permits and returning affected sections to service.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT001 Install overhead rail traction configurations

UETDRRT002 Install overhead traction components and equipment

UETDRRT004 Install traction overhead wiring systems

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for rail traction switching operations to a given schedule	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Operational/switching schedules are obtained and confirmed with stakeholders, as required
	1.3 Alterations to the schedules which may be required after assessing the worksite is communicated to stakeholders for formal approval
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with schedule and workplace requirements
	1.7 Work permits are organised in accordance with workplace requirements
	1.8 Worksite, road or rail management plan is prepared in accordance with workplace requirements
	1.9 Personnel participating in work are fully briefed and responsibilities confirmed in accordance with workplace requirements
2 Carry out rail traction switching operations to a	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

given schedule		be performed are applied and monitored
	2.2	The use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Communications with electrical control officer are established and maintained during switching operation in accordance with workplace requirements
	2.5	Rail traction switching operations are completed in agreed timeframes in accordance with workplace requirements
	2.6	Electrical equipment and associated sections for the worksite are isolated and proven de-energised using appropriate testing devices and earthed or rail connected, where required, in accordance with schedule and workplace requirements
	2.7	Work permits are instructed and issued, and signed in accordance with workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Work permits are cancelled or relinquished in accordance with workplace requirements
	2.10	Electrical equipment and associated sections for the worksite are returned to service in accordance with schedule and workplace requirements
3 Conclude rail traction switching operations to a given schedule	**3.1**	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.3	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.4	Work records, reports and documentation are completed and processed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT30 Perform to a given schedule rail traction switching operations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT013 Perform rail traction switching operations to a given schedule

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- using and verifying switching scheduling documents
- using appropriate communication with the following:
  - electrical control officer
  - permit holders
  - other network stakeholders
- performing at least one (1) of the following types of rail traction switching operations to a given schedule:
  - high voltage (HV)/low voltage (LV) circuit breakers
  - HV/LV switches
  - HV/LV isolators
  - HV/LV links
  - HV/LV bridges
  - HV/LV fuses
- using at least one (1) of the following types of testing equipment whilst performing overhead traction switching:
  - voltage detectors
  - field intensity meter
  - polarity testers
  - phase rotation indicators
- using all of the following:
  - portable earthing/rail-connecting equipment
  - operating rods/sticks

- completing all of the following stages of electrical permits:
  - writing
  - issuing
  - cancelling or relinquishing
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- standards, codes, legislation, supply authority regulations and workplace requirements applicable to:
  - switching schedules
  - electrical operating diagrams
  - permits
  - communication procedures
  - PPE required for switching
  - danger tag or lockout procedures
- types of rail traction operation switches
- types of testing equipment for overhead traction switching
- portable earthing/rail-connecting equipment
- operating rods/sticks
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic

and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for performing rail traction switching operations to a given schedule
- applicable documentation, including workplace requirements, switching schedules, electrical operating diagrams, permits, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT014 Test and verify rail traction installations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to test and verify rail traction installations in the electricity supply industry (ESI).

It includes inspecting, testing and verifying rail traction installations are safe and comply with design and maintenance standards. It also includes working safely, reporting defects and non-compliances in accordance with workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT001 Install overhead rail traction configurations

UETDRRT002 Install overhead traction components and equipment

UETDRRT003 Install rail traction bonds

UETDRRT004 Install traction overhead wiring systems

UETDRRT008 Maintain overhead rail traction configurations

UETDRRT009 Maintain overhead traction components and equipment

UETDRRT010 Maintain rail traction bonds

UETDRRT011 Maintain traction overhead wiring systems

UETDRRT012 Operate rail road height access plant near rail traction systems

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to inspect, test and verify rail traction installations	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Required design standards and construction plans are obtained
	1.3 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Specialist test and measurement equipment for testing and verification of rail traction installations are obtained and confirmed in working order in accordance with

		workplace requirements
	1.8	Worksite, road or rail management plan is prepared in accordance with workplace requirements
2 Carry out inspection, test and verification of rail traction installations	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
	2.5	Worksite, road or rail management plan is established in accordance with workplace requirements
	2.6	Rail traction installations, conductors, hardware and components are inspected, secured and connected in accordance with design standards and workplace requirements
	2.7	Rail traction installations are tested to verify fit for service
	2.8	Rail traction bonding for the installation is inspected and compliance verified in accordance with design standards and workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Report inspection and test results	**3.1**	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.3	Non-compliance defects are identified, corrected and/or reported in accordance with workplace requirements
	3.4	Recommendations for rectifying defects are made in accordance with workplace requirements

3.5 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.7 Work permits are completed and rail traction installation is fit for service in accordance with workplace requirements

3.8 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRRT99 Test and verify rail traction installations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT014 Test and verify rail traction installations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- inspecting rail traction installations for compliance to design standards using at least one (1) of the following types of inspection equipment:
  - infra-red camera
  - camera
  - binoculars
  - drone
  - laser measuring equipment
  - portable pantograph
  - laser gauge
- testing and verifying against design standards to rectify non-compliances on at least three (3) of the following components and hardware:
  - insulators
  - clamps
  - conductor spacers/knuckles
  - structural components
  - auto tensioning devices
  - switches
- testing and verifying against design standards to rectify non-compliances on at least one (1) of the following types of rail traction conductors:
  - copper
  - aluminium
  - steel
  - aluminium/steel reinforced

    - rigid rail
- testing and verifying the rail traction bonding against design standards
- working safely aloft using at least one (1) of the following types of mobile plant and height equipment:
    - elevated work platform (EWP)
    - portable platform
    - ladder
- using the following types of testing and earth/bond equipment:
    - volt metre alternating current (a.c.) or direct current (d.c.)
    - earthing conductors/short circuiting conductor
    - insulation resistance tester
- recording test results in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
    - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- requirements for testing rail traction installation for maintenance and construction for safe operational use, including:
    - test results that show a rail traction installation is safe for connection to the supply
    - periodic inspection results and tests that show construction site wiring and equipment is safe to use
    - periodic inspection results and tests that show the rail traction installations electrical equipment are safe to use
- testing techniques, including:
    - rail traction system phasing, phase rotation, polarity and network standards
    - electrical rail traction network voltage levels as per network supply standards
    - potential rail traction network for neutral conductors
    - insulation resistance
    - earthing system/rail traction cables and components
- testing and verifying procedures for rail traction installations, including:
    - testing and recording defects

  - verifying against design standards
  - electrical compliance
  - documentation of testing of quality assurance
- energised tests and commissioning, as required, to verify rail traction installations
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for testing and verifying rail traction installations
- applicable documentation, including workplace requirements, relevant design and maintenance standards, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRRT015 Maintain energised rail traction networks

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain energised rail traction networks in the electricity supply industry (ESI).

It includes knowledge of traction network components, insulated tools and other equipment.

It also includes procedures for maintaining components, removal of trapped foreign objects, and adjustment and measurement of contact or trolley wires.

Note: Entry into this unit is for users who hold a Certificate III in ESI - Rail Traction.

This unit can be completed concurrently with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to accrediting this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

outcomes.	demonstrate achievement of the element.
1 Prepare to maintain energised rail traction networks	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Required design standards and maintenance documents are identified and obtained
	1.3 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite, road or rail management plan is prepared in accordance with workplace requirements
2 Maintain energised rail traction networks	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Plant, tools, equipment and PPE are used in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.5 Work is carried out on energised rail traction networks in accordance with workplace requirements
	2.6 Quality checks of work are undertaken in accordance with workplace requirements and to ensure fit for service
3 Complete work and documentation	**3.1** Completed work is checked against maintenance documents for compliance in accordance with workplace requirements
	3.2 Worksite is rehabilitated, cleaned and made safe in

accordance with workplace requirements

3.3 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.4 Work permits are completed, and overhead traction equipment or components are confirmed fit for service in accordance with workplace requirements

3.5 Incidents or unplanned events are reported in accordance with workplace requirements

3.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a newly created unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRRT015 Maintain energised rail traction networks

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining and inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- obtaining and inspecting tools, plant and equipment and confirming working order
- performing two (2) of the following maintenance activities on an energised rail traction network:
  - maintaining, repairing, removing or replacing components
  - removing trapped foreign objects
  - adjusting contact or trolley wires
  - measuring contact or trolley wires
- performing work on an energised rail traction network from at least one (1) of the following:
  - elevated work platform (EWP)
  - insulated ladder
  - insulated mobile platform
  - ground level using an insulated pole/hot stick
- using at least one (1) of the following:
  - specialised tools
  - insulated gloves
  - tensioning equipment
  - geometry profiling equipment

- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- removal of trapped foreign objects
- adjustment of contact or trolley wires
- measurement of contact or trolley wires
- maintenance, repair, removal and replacement of components, including:
  - span
  - section insulator
  - support equipment
  - catenary
  - dropper
  - contact/trolley
  - feeder/in-span feeder
  - drape/potential jumper
- safe use and function of:
  - specialised equipment
  - tensioning equipment
  - insulated pole/hot stick
  - ropes, slings and chains
  - geometry profiling equipment.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB001 Perform substation switching operations to a given schedule

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform substation switching operations to a given schedule in the electricity supply industry (ESI).

It includes switching operations in zone, traction or terminal substations in accordance with workplace requirements.

It also includes using specialised tools, personal protective equipment (PPE) and testing equipment.

Note: Entry requirement into the unit is for users that have successfully completed:

- *a UET Certificate III, IV, Diploma or Advanced Diploma qualification or the equivalent issued in an Australian state or territory*
- *or*
- *an Electrician or Electrical Fitter qualification or the equivalent issued in an Australian state or territory*
- *or*
- *in the final stages of completing an apprenticeship in the above qualifications.*

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under State and Territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable, refer to unit application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for substation switching	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Switching schedules are obtained and confirmed in accordance with workplace requirements
	1.3 Plant, tools, equipment and PPE required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks are assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Work permit/approval is organised in accordance with workplace requirements
	1.7 Worksite is prepared to in accordance with the work plan and workplace requirements
2 Carry out substation switching	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools and equipment are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Communication with switching control officer is established and maintained during switching operations in accordance with workplace requirements
	2.5 Approval is obtained to commence substation switching

		in accordance with workplace requirements
	2.6	Substation switching is performed to isolate and/or transfer supply in accordance with switching schedule and workplace requirements
	2.7	Work permit is written and issued in accordance with the switching schedule and workplace requirements
	2.8	Work permit is cancelled or relinquished in accordance with workplace requirements
	2.9	Approval is obtained to commence restoration of supply in accordance with workplace requirements
	2.10	Substation switching is performed to restore supply in accordance with the switching schedule and workplace requirements
	2.11	Switching controller is notified restoration has been completed in accordance with workplace requirements
	2.12	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Incidents or unplanned events are reported in accordance with workplace requirements
	3.2	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.3	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.4	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRSB39 Perform power system substation switching operation to a given schedule.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB001 Perform substation switching operations to a given schedule

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- establishing and maintaining communications with the following:
  - switching controller
  - permit holders
- obtaining approval to perform substation switching to a given schedule
- performing substation switching operations to a given schedule completing all of the following:
  - isolation
  - restoration
- using at least three (3) of the following specialist tools and equipment:
  - voltage detectors*
  - operating sticks
  - portable earths
  - phasing equipment
  - operating handles
  - (*must do)
- operating at least four (4) of the following electrical apparatus:
  - links
  - earth switches
  - air-break switches
  - circuit breakers
  - fuses
- operating the substation electrical equipment remotely via a panel/display

- dealing with an unplanned event on at least one (1) occasion
- organising, issuing, cancelling or relinquishing relevant work permits/approvals in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of work permits/approvals
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- substations, including:
  - types
  - layouts
  - bus bar configurations
  - types of electrical apparatus
  - types, function and operating characteristics of various switchgear
  - earthing systems
  - voltage regulation
- protection systems, including:
  - types, function and operating characteristics
  - protection equipment
  - interconnectors and possible sources of back-feed
- substation power supplies, including:
  - low voltage supply
  - batteries and battery charges
- substation switching principles, including:
  - manuals, system diagrams/plans and drawings
  - responsibilities of the switching operator
  - isolation, restoration, paralleling and transferring
  - earthing requirements and procedures
  - requirements and procedures of the operation of switchgear
  - safety requirements and procedures

- use and operation of specialised equipment and tools
- emergency/fault switching

- substation automation system, including:
  - supervisory control and data acquisition (SCADA) system security interlocks and access restrictions
  - function of the main components of a local/remote control system
  - operation procedure for switching from a local control station
  - functions of SCADA (or any other relevant data acquisition and control) systems and its main components
  - operation of a field devices using SCADA systems via a RAT, dial up annunciated system and local control station.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry performing substation switching operations to a given schedule
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB002 Commission and maintain discrete control and protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to commission and maintain discrete control and protection systems in the electricity supply industry (ESI).

It includes commissioning and maintenance procedures, detailed operation and settings of protection and control schemes, and procedures for evaluating serviceability of equipment.

It also includes principles and procedures for isolation and tagging, undertaking functional checks, and testing techniques and equipment.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to commission and maintain discrete control and protection systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements, and where relevant, communicated to the appropriate personnel
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Commission and maintain discrete control and protection systems	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.4	Hazard control measures are monitored in accordance with workplace requirements
	2.5	Discrete control and protection systems are commissioned in accordance with workplace requirements
	2.6	Discrete control and protection systems are maintained in accordance with workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Incidents or unplanned events are reported in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB35 Maintain discrete control and protection systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB002 Commission and maintain discrete control and protection systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- confirming pre-commission testing
- undertaking functional checks and testing, including all of the following:
  - isolating protection
  - direct current (d.c.) relay supply
  - controls, indicators and alarms
  - overcurrent
  - earth fault
  - trip and control circuits
  - relay settings
- maintaining at least three (3) of the following protection devices:
  - parallel operation
  - thermal overloads
  - voltage regulation
  - overcurrent
  - earth fault
  - automatic changeover
  - auto-reclose
  - buchholz relay

    - cooling controls
    - d.c. relay supply
    - frame leakage
    - neutral displacement
    - parallel operation
    - thermal overloads
    - transformer temperature control devices
- commissioning at least three (3) of the following protection devices:
    - parallel operation
    - thermal overloads
    - voltage regulation
    - overcurrent
    - earth fault
    - automatic changeover
    - auto-reclose
    - buchholz relay
    - cooling controls
    - d.c. relay supply
    - frame leakage
    - neutral displacement
    - parallel operation
    - thermal overloads
    - transformer temperature control devices.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- procedures for identifying and responding to an unplanned event
- workplace records, reports and documentation
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- electrical equipment associated with protection and control schemes including:
    - types and applications

  - characteristics and capabilities
- testing techniques and procedures
- types and applications of test equipment
- operation and maintenance procedures for protection devices
- relay manufacturer specifications, types, function and characteristics
- operation and maintenance procedures associated with voltage regulation schemes
- circuit breaker auxiliary systems
- detailed operation and setting of protection and control schemes
- location and rectification of faults in low voltage (LV) electrical equipment
- principles and procedures for isolation and tagging
- commissioning and maintenance procedures, including:
  - compliance with workplace requirements
  - system diagrams, drawings and operating manuals
  - close out requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB003 Commission and maintain distribution field devices

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to commission and maintain distribution field devices in the electricity supply industry (ESI).

It includes commissioning and maintenance procedures for distribution protection and control systems.

It also includes use of manuals, system diagrams and drawings.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Substation

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to commission distribution field devices	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements, and where relevant, communicated to the appropriate personnel
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Commission distribution field devices	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.4	Distribution field devices are commissioned in accordance with workplace requirements
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB38 Commission power system distribution field devices.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB003 Commission and maintain distribution field devices

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- completing four (4) of the following commissioning and maintenance activities:
  - confirming device construction specifications
  - applying device settings
  - performing secondary injections
  - performing timing checks
  - confirming remote operations
  - performing earthing checks
  - performing calibrations
- performing commissioning and maintenance of at least six (6) of the following distribution field devices components:
  - automatic circuit reclosers (ACRs)
  - fuses
  - circuit breakers
  - transformers
  - gas switches
  - sectionalisers
  - regulators
  - capacitors

- reactors
- mobile phone systems
- mobile radio systems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation requirements
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- manuals, system diagrams and drawings
- commissioning and maintenance procedures for distribution field devices
- principles and operating parameters of distribution field devices, including:
  - automatic circuit reclosers (ACRs)
  - fuses
  - circuit breakers
  - transformers
  - gas switches
  - sectionalisers
  - regulators
  - capacitors
  - reactors
  - mobile phone systems
  - mobile radio systems.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB004 Conduct surveys using thermovision techniques

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to conduct surveys using thermovision techniques in the electricity supply industry (ESI).

It includes thermovision tools and accessories, including types, construction and function, calibration, care and maintenance, and data analyses and interpretation.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to conduct surveys using thermovision techniques	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements, and where relevant, communicated to the appropriate personnel
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Conduct surveys using thermovision techniques	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.4 Surveys are conducted using thermovision techniques in accordance with workplace requirements
	2.5 Incidents or unplanned events are responded to in accordance with workplace requirements

3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB34 Carry out surveys using thermovision techniques.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB004 Conduct surveys using thermovision techniques

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- conducting surveys using thermovision techniques in one (1) of the following substations:
  - transmission
  - distribution
  - traction
  - zone
  - terminal switching station
- performing surveys using thermovision techniques on at least one (1) of the following:
  - plant and equipment
  - transmission/distribution system conductors and components
- performing surveys using thermovision techniques on at least three (3) of the following associated equipment:
  - disconnectors
  - transmission/distribution system conductors
  - mid-span joints
  - bolted palms and connections
  - terminations
  - jumpers
  - potheads.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- evaluation of equipment serviceability
- thermovision tools and accessories, including:
  - types, construction and function
  - calibration
  - care and maintenance
  - data analyses and interpretation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB005 Diagnose and resolve faults in a substation environment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to diagnose and resolve faults in a substation in the electricity supply industry (ESI).

It includes knowledge of substation types, equipment, components, interpreting alarms and indicators from control and protection systems, and diagnosing faults

It also includes fault conditions and symptoms, isolation procedures, switching diagrams and drawings, and substation materials including hazardous substances.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to diagnose and resolve faults in a substation environment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirement
	1.5 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to perform work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Diagnose and resolve faults in a substation environment	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.4 Hazard control measures are monitored in accordance

	with workplace requirements
	2.5 Faults are diagnosed and resolved in accordance with workplace requirements
	2.6 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.7 Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Work permits are signed off in accordance with workplace requirements
	3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4 Tools, equipment and surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with workplace procedures
	3.5 Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace
	3.6 Incidents or unplanned events are reported in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB21 Diagnose and rectify faults in

substation environment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB005 Diagnose and resolve faults in a substation environment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- interpreting alarms and indicators, using existing technology
- diagnosing and resolving faults on at least two (2) of the following:
  - high voltage (HV) circuit breaker control system
  - transformer control system
  - direct current (d.c.) supply system
  - d.c. switchgear and equipment
  - communication equipment
- diagnosing faults using at least three (3) of the following testers:
  - multi meters
  - tong testers
  - insulation resistance/continuity tester
  - low resistance high current tester
  - overload injection tester
  - specialist test equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- evaluation of equipment serviceability
- low voltage (LV) and HV isolation procedures
- interpretation of different system switching diagrams and drawings
- identification and procurement of materials and apparatus
- testing equipment, including:
  - voltage detection devices
  - multi meters
  - tong testers
  - insulation resistance/continuity testers
  - low resistance high current testers
  - overload injection testers
  - specialist testing equipment
  - temperature sensors
- interpretation of alarms and indicators from control and protection systems, and diagnosis of faults in:
  - HV circuit breaker control system
  - power and instrument transformer control system
  - busbars and feeders
  - reactive plant
  - d.c. switchgear and equipment
  - d.c. supply system
  - communication equipment
- fault conditions and symptoms, including:
  - types and typical fault conditions
  - interpretation of mechanical faults
  - interpretation of electrical faults
  - auxiliary systems
  - protection and alarm systems
- substation equipment, components and materials, including:

- control and protection equipment
- remote and local operating principles and conventions
- serviceability and control systems
- replacements
- indication of levels, quantities, volumes, pressures and temperatures
- types of materials, including insulation, construction, fabrication and lubrication
- hazardous materials.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB006 Inspect substations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to inspect substations in the electricity supply industry (ESI).

It includes inspection of substation plant, equipment, environmental systems and security systems.

It also includes identifying, categorising, and reporting defects within a substation environment.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to inspect substation	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.7 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Inspect substation	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are

		carried out in accordance with workplace requirements
	2.4	Substation equipment, security systems and environmental protection systems are inspected in accordance with workplace requirements
	2.5	Defects are assessed for level of safety or system impact and reported or rectified in accordance with workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB22 Carry out power systems substation

inspection.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB006 Inspect substations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- assessing defects for level of safety or system impact and rectifying where appropriate
- reporting of defects in accordance with workplace requirements
- performing inspections on at least one (1) of the following substations:
  - transmission
  - distribution
  - traction
  - zone
  - terminal switching station
- performing substation inspections on the following:
  - plant and equipment
  - environmental systems
  - security systems
- performing substation inspection on at least ten (10) of the following:
  - circuit breaker
  - transformer
  - control system
  - operating mechanism cabinet
  - voltage transformer
  - current transformer

- surge arrestor
- capacitor bank
- static var compensator (SVC)
- synchronous condenser
- harmonic filter
- rectifier transformer
- rectifier
- inverter
- negative reactor (traction)
- energy dissipation resistor
- earthing resistor
- disconnector/isolator
- earth switch
- fault throwing switch
- a.c. and d.c. supply system
- control room environment
- testing equipment
- fire systems equipment
- oil spill equipment
- high voltage operating equipment
- portable earth.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- operational manuals, system diagrams/plans and drawings
- assessment of defects for level of safety or system impact
- defect reports
- substations, including:
  - types

- layouts
- bus bar configurations
- types of electrical apparatus
- function and operating characteristics of various switchgear
- earthing systems
- voltage regulation

- types, characteristics and possible defects of:
  - plant and equipment
  - environmental systems
  - security systems
  - testing equipment
  - fire systems equipment
  - portable earths
  - high voltage operating equipment.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB007 Install and maintain substation direct current systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to install and maintain substation direct current (d.c) systems in the electricity supply industry (ESI).

It includes types, characteristics, maintenance requirements, installation procedures and common defects of batteries, chargers and associated control systems.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain substation d.c. systems	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.7 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Install and maintain substation d.c. systems	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Hazard control measures are monitored in accordance with workplace requirements
	2.3 Work permits are received and signed in accordance with workplace requirements
	2.4 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.5	Substation d.c. systems are installed in accordance with workplace requirements
	2.6	Substation d.c. systems are maintained in accordance with workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.8	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB23 Install and maintain substation direct

current systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB007 Install and maintain substation direct current systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- installing and maintaining at least one (1) of the following types of batteries:
  - nickel cadmium
  - lead acid
  - gel cell
  - lithium ion
- installing and maintaining at least one (1) of the following battery systems:
  - main
  - communication
  - storage
- installing and maintaining battery chargers and direct current (d.c). control circuits
- performing at least two (2) of the following types of tests:
  - cell voltage test
  - hydrometer/specific gravity test
  - battery discharge and capacity tests
  - impedance testing.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria, and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- operational manuals and system diagrams
- batteries, including:
  - types
  - characteristics
  - maintenance requirements
  - installation procedures
  - common defects and rectification
- battery stands and enclosures, including:
  - types
  - characteristics
  - maintenance requirements
  - installation procedures
  - common defects and rectification
  - access requirements
- charging systems, including:
  - types
  - characteristics
  - maintenance requirements
  - installation procedures
  - common defects and rectification
- substation d.c. systems, including:
  - protection
  - switching
  - monitoring
  - common panel layouts
  - uninterrupted power supply (UPS)
- specialised tools, including:

- types, construction and function
- calibration
- care and maintenance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB008 Install high current d.c. equipment and switchgear

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to install high current direct current (d.c.) equipment and switchgear in the electricity supply industry (ESI).

It includes d.c. circuit breakers, rectifier transformers, rectifiers, isolators and links, harmonic filters, negative reactors, and energy dissipation resistors.

It also includes diagrams, drawings, manuals, specialised tools, and testing equipment.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install high current d.c. switchgear and equipment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements, and where relevant, communicated to the appropriate personnel
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work permits are determined in accordance with workplace requirements
	1.7 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Install high current d.c. switchgear and equipment	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are

		carried out in accordance with workplace requirements
	2.4	Hazard control measures are monitored in accordance with workplace requirements
	2.5	High current d.c. switchgear and equipment is installed in accordance with workplace requirements
	2.6	Quality checks of work are undertaken in accordance with work plan and workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB26 Install high current d.c. equipment and

switchgear.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB008 Install high current d.c. equipment and switchgear

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- using at least five (5) of the following testing equipment on at least one occasion:
  - ammeter
  - voltmeter
  - insulation resistance tester
  - micro-ohm tester
  - multimeter
  - drop-out tester
- using drawings and diagrams including all of the following:
  - building layouts
  - cable block diagrams
  - cable schedules
  - operating and substation arrangement diagrams
  - wiring diagrams and schematic drawings
- installing high current d.c. equipment and switchgear on at least six (6) of the following types:
  - d.c. circuit breaker
  - rectifier transformer
  - rectifier

  - isolator and link
  - harmonic filter
  - negative reactor
  - energy dissipation resistor
- installing high current d.c. associated equipment on at least ten (10) of the following:
  - d.c. feeder
  - surge arrester
  - isolating link
  - busbar
  - cable
  - cable support
  - pit and enclosure
  - protection/alarm system
  - control wiring
  - metering
  - supervisory interface
  - cabinet
  - rail earth contactor (REC)
- installing protection using at least three (3) of the following types:
  - buchholz
  - frame leakage
  - overcurrent
  - earth leakage
  - reverse current
  - delta I
  - diode protection
- performing one cable and busbar termination
- performing alignment of withdrawable equipment on one occasion.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident

- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- diagrams, drawings, and manuals, including:
  - electrical and mechanical drawings
  - operating and substation arrangement diagrams
  - manufacturers' manuals
- specialised tools, including:
  - types, construction and function
  - calibration
  - care and maintenance
- testing equipment, including:
  - types, construction and function
  - calibration
  - care and maintenance
- high current d.c. equipment, associated equipment and switchgear, including:
  - types, construction and function
  - installation techniques
  - procedures for checking completed installation for compliance
- high current d.c. protection equipment, including:
  - types, construction and function
  - installation techniques
  - procedures for checking completed installation for compliance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB009 Install high voltage plant and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to install high voltage (HV) plant and equipment, in the electricity supply industry (ESI).

It includes high voltage plant and equipment (excluding associated protection systems), testing equipment, specialised tools, and use of diagrams, drawings, and manuals.

It also includes procedures for workplace records, reports and documentation.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install HV plant and equipment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work permits are determined in accordance with workplace requirements
	1.7 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Install HV plant and equipment	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE

		are carried out in accordance with workplace requirements
	2.4	Hazard control measures are monitored in accordance with workplace requirements
	2.5	HV plant and equipment is installed in accordance with workplace requirements
	2.6	Quality checks of work are undertaken in accordance with work plan and workplace requirements
	2.7	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB33 Install high voltage plant and equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB009 Install high voltage plant and equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- using drawings and diagrams including all of the following:
  - building layouts
  - cable block diagrams
  - cable schedules
  - operating and substation arrangement diagrams
  - wiring diagrams and schematic drawings
- using at least five (5) of the following testing equipment on at least one occasion:
  - ammeter
  - voltmeter
  - insulation resistance tester
  - micro-ohm tester
  - multimeter
  - specialised equipment
- installing at least two (2) of the following types of equipment:
  - power transformer
  - high voltage (HV) reactor
  - auxiliary transformer
  - current transformer

  - voltage transformer
  - capacitor bank
  - circuit breaker
- installing at least two (2) of the following types of associated equipment:
  - disconnector
  - fault throwing switch
  - earth switch
  - earth grid connections
  - surge arrestor
  - neutral earthing transformer
  - resistor bank
  - busbar
- performing at least three (3) of the following tests:
  - insulation resistance
  - dielectric dissipation factor
  - low voltage (LV) excitation
  - continuity
  - ratio
  - winding resistance
  - gas pressure
  - timing
  - contact resistance.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- diagrams, drawings, and manuals, including:
  - electrical and mechanical drawings
  - operating and substation arrangement diagrams
  - manufacturers' manuals

- specialised tools, including:
  - types, construction and function
  - calibration
  - care and maintenance
- testing equipment, including:
  - types, construction and function
  - calibration
  - care and maintenance
- HV plant and equipment, including:
  - types, construction and function
  - installation techniques
  - procedures for checking completed installation for compliance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB010 Maintain capacitor bank equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain capacitor bank equipment in the electricity supply industry (ESI).

It includes different capacitor bank types, characteristics, isolation and discharge, maintenance requirements, common defects and rectification.

It also includes ancillary components of capacitor banks, testing requirements and the use of specialised tools and equipment.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain capacitor bank equipment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain capacitor bank equipment	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.4 Capacitor bank equipment is maintained in accordance

		with workplace requirements
	2.5	Quality checks of work are undertaken in accordance with work plan and workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB29 Maintain capacitor bank equipment for voltage regulation.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB010 Maintain capacitor bank equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintaining at least two (2) of the following types of capacitor bank systems:
  - double star neutral current unbalance
  - voltage unbalance
  - floating star
  - earthed star
  - harmonic filter
  - series
- maintaining at least two (2) of the following components:
  - internal discharge resistor cans
  - external resistor type
  - switching reactors
  - neutral unbalance current transformer
- performing at least three (3) of the following types of tests:
  - insulation resistance
  - capacitance
  - unbalance current/voltage
  - primary injection
  - high voltage (HV) direct current d.c. withstand.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- operational manuals and system diagrams
- capacitor banks, including:
  - types
  - characteristics
  - isolation and discharge
  - maintenance requirements
  - common defects and rectification
- testing, including:
  - insulation resistance
  - capacitance
  - unbalance current/voltage
  - primary injection
  - HV direct current d.c. withstand
- ancillary components, including:
  - internal discharge resistor cans
  - external resistor type
  - switching reactors
  - neutral unbalance current transformer
- specialised tools, including:
  - types, construction and function
  - calibration
  - care and maintenance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB011 Maintain high current d.c. equipment and switchgear

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain high current direct current (d.c.) equipment and switchgear in the electricity supply industry (ESI).

It includes d.c. circuit breakers, rectifier transformers, rectifiers, isolators and links, harmonic filters, negative reactors, and energy dissipation resistors.

It also includes diagrams, drawings, manuals, specialised tools, and testing equipment.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain high current d.c. switchgear and equipment	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements, and where relevant, communicated to the appropriate personnel
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work permits are determined in accordance with workplace requirements
	1.7 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain high current d.c. switchgear and equipment	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are

		carried out in accordance with workplace requirements
	2.4	High current d.c. switchgear and equipment is maintained in accordance with workplace requirements
	2.5	Quality checks of work are undertaken in accordance with work plan and workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB27 Maintain high current d.c. equipment and switchgear.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB011 Maintain high current d.c. equipment and switchgear

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- using at least five (5) of the following testing equipment on at least one (1) occasion:
  - ammeter
  - voltmeter
  - insulation resistance tester
  - micro-ohm tester
  - multimeter
  - drop-out tester
- using drawings and diagrams including all of the following:
  - building layouts
  - cable block diagrams
  - cable schedules
  - operating and substation arrangement diagrams
  - wiring diagrams and schematic drawings
- maintaining high current direct current (d.c.) equipment and switchgear on at least six (6) of the following types:
  - d.c. circuit breaker
  - rectifier transformer
  - rectifier

  - isolator and link
  - harmonic filter
  - negative reactor
  - energy dissipation resistor
- maintaining high current d.c. associated equipment on at least ten (10) of the following:
  - d.c. feeder
  - surge arrester
  - isolating link
  - busbar
  - cable
  - cable support
  - pit and enclosure
  - protection/alarm system
  - control wiring
  - metering
  - supervisory interface
  - cabinet
  - rail earth contactor (REC)
- maintaining protection using at least three (3) of the following types:
  - buchholz
  - frame leakage
  - overcurrent
  - earth leakage
  - reverse current
  - delta I
  - diode protection.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation

- work on energised systems
- diagrams, drawings, and manuals, including:
  - electrical and mechanical drawings
  - operating and substation arrangement diagrams
  - manufacturers' manuals
- specialised tools, including:
  - types, construction and function
  - calibration
  - care and maintenance
- testing equipment, including:
  - types, construction and function
  - calibration
  - care and maintenance
- high current d.c. equipment, associated equipment and switchgear, including:
  - types, construction and function
  - maintenance procedures
  - procedures for checking maintenance tasks for compliance
- high current d.c. protection equipment:
  - types, construction and function
  - maintenance procedures
  - checking maintenance tasks for compliance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB012 Maintain high voltage circuit breakers

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain high voltage (HV) circuit breakers in the electricity supply industry (ESI).

It includes types and characteristics of circuit breakers, their operating mechanisms and insulating mediums, and procedures for testing and maintaining each type.

It also includes application, purpose and types of permits and access authorities.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain HV circuit breakers	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain HV circuit breakers	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.4	HV circuit breakers are maintained in accordance with workplace requirements
	2.5	Quality checks of work are undertaken in accordance with work plan and workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB24 Maintain high voltage power system circuit breakers.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB012 Maintain high voltage circuit breakers

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintaining high voltage (HV) circuit breakers on at least two (2) of the following types:
  - bulk oil
  - minimum oil
  - air blast
  - air insulated
  - vacuum
  - air-insulated switchgear (AIS)
  - gas-insulated switchgear (GIS)
- maintaining at least two (2) of the following types of operating mechanisms:
  - spring
  - solenoid
  - hydraulic
  - pneumatic
- performing at least three (3) of the following tests:
  - insulation resistance
  - contact resistance
  - minimum close and open operations (reduced voltage tests)
  - sequence timing

    - contact timing
    - vibration
    - gas pressure
- performing tests using at least two (2) of the following:
    - pressure measuring devices
    - gas measuring devices
    - oil sampling devices
- performing at least one (1) of the following tests:
    - gas sampling
    - oil sampling.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- gas systems
- specialised tools, including:
    - types, construction and function
    - calibration
    - care and maintenance
- low voltage (LV) switching principles, including:
    - use of manuals, and electrical and mechanical diagrams
    - types, characteristics and capabilities of electrical apparatus
    - source of back-feed
- HV switching principles, including:
    - use of manuals, and electrical and mechanical diagrams
    - types, characteristics and capabilities of electrical apparatus
    - identification of components and associated control housings
    - control equipment and auxiliary relays, flags and alarms

  - remote and local operating principles and conventions
  - maintenance safety switches and interlocks
- procedures for maintaining different types of HV circuit breakers, including:
  - circuit breaker operating principles
  - interrupter chambers
  - interpretation of faults
  - fault conditions and symptoms
  - protection systems
- procedures for maintaining different types of operating mechanisms, including:
  - capabilities
  - interpretation of faults
  - performing different types of maintenance tests.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB013 Maintain on-load tap changers (OLTC)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain on-load tap changers (OLTCs) in the electricity supply industry (ESI).

It includes types and characteristics of OLTCs and procedures for testing and maintaining each type. It also includes application, purpose and types of permits and access authorities.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain OLTC	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain OLTC	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.4 OLTC is maintained in accordance with workplace requirements
	2.5 Incidents or unplanned events are responded to in accordance with workplace requirements

	2.6	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB32 Maintain power transformer on load tap changers (OLTC).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB013 Maintain on-load tap changers (OLTC)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintaining at least one (1) of the following OLTCs:
  - high speed resistor type and drive mechanism
  - high speed reactor type and drive mechanism
  - live tank diverter switch
  - dead tank diverter switch
  - tap selector
- performing at least three (3) of the following power transformer tests:
  - insulation resistance
  - polarisation index
  - dielectric dissipation factor
  - low voltage (LV) excitation
  - frequency response analysis
  - recovery voltage measurements
  - winding ratio
  - winding resistance
  - oil sampling
  - applied high voltage (HV) test
- performing at least three (3) of the following OLTC tests:

- insulation resistance
- winding resistance
- contact resistance
- transition resistor
- sequence timing
- winding ratio
- oil sampling.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- maintenance and testing of OLTCs
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- specialised tools, including:
  - types, construction and function
  - calibration
  - care and maintenance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy

requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB014 Maintain power and instrument transformers

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain power and instrument transformers in the electricity supply industry (ESI).

It includes types and characteristics of different transformers and their insulating mediums, and procedures for testing and maintaining each type.

It also includes application, purpose and types of permits and access authorities.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain power and instrument transformers	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain power and instrument transformers	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.4	Power and instrument transformers are maintained in accordance with workplace requirements
	2.5	Quality checks of work are undertaken in accordance with work plan and workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB25 Maintain high voltage power and instrument transformers.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB014 Maintain power and instrument transformers

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintaining at least one (1) of the following:
  - power transformer
  - high voltage (HV) reactor
- maintaining at least two (2) of the following:
  - current transformer
  - voltage transformer
  - auxiliary transformer
- performing at least two (2) of the following tests:
  - insulation resistance
  - dielectric dissipation factor
  - low voltage (LV) excitation
  - frequency response analysis
  - recovery voltage measurements
  - winding ratio
  - winding resistance
  - oil sampling.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- power and instrument transformer testing and maintenance
- specialised tools, including:
  - types, construction and function
  - calibration
  - care and maintenance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB015 Maintain static var compensators (SVC)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain high voltage static var compensators (SVC) in the electricity supply industry (ESI).

It includes reactive power flow, transformers, and main SVC reactive components.

It also includes control systems, thyristor valves, cooling equipment, protection systems, and use of appropriate tools and equipment.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain SVC	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain SVC	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.4	SVCs are maintained in accordance with workplace requirements
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB30 Maintain high voltage power system static VAR compensators (SVC).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB015 Maintain static var compensators (SVC)

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintaining at least two (2) of the following types of equipment:
  - static var compensator (SVC) power transformer
  - SVC auxiliary transformer
  - instrument transformer
  - capacitors
  - reactors
  - surge arresters
  - surge capacitors
  - low voltage system stabilisers
  - protection systems
- maintaining all of the following SVC components:
  - control system
  - thyristor valves, which may include gate electronics and ground level power supplies
  - cooling equipment, which may include pumping equipment and deionisers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- transformer types, characteristics and purpose
- principles of direct current (d.c.) auxiliary systems
- SVC human machine interface (HMI)
- main SVC reactive components, including:
  - thyristor controlled reactors (TCR)
  - thyristor switched reactors (TSR)
  - thyristor switched capacitors (TSC)
  - harmonic filters (HF)
- control systems, modes of operation, and characteristics, including:
  - voltage control
  - reactive power control
  - power factor control
  - susceptance control
  - transient response
  - power oscillation damping
- thyristor valves, including:
  - redundant thyristor levels
  - electrically triggered
  - optically triggered
  - gate electronics
  - ground level power supplies
- cooling equipment, including:
  - rating
  - instrumentation
  - pumps
  - deionisers

  - heat exchangers
- protection systems, including:
  - reactor thermal overload
  - capacitor peak repetitive overvoltage and unbalance
  - neutral voltage displacement
  - transformer differential
  - point on wave switching
- reactive power flow
- surge arresters and capacitors
- low voltage system stabilisers
- use of appropriate tools and equipment.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSB016 Maintain synchronous condensers

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain synchronous condensers in the electricity supply industry (ESI).

It includes synchronous condenser principles including, types, operating constraints, ratings, control systems, excitation and synchronising.

It also includes components, including starters, control and protection systems, substation fundamentals, cooling and lubrication systems.

Note: Entry into this unit is for users who:

- *hold the unit UETDREL005 Work safely in the vicinity of live electrical apparatus or equivalent,*

and

- *hold an Electrician licence or the equivalent issued in an Australian state or territory,*

or

- *hold an Electrician qualification or the equivalent issued in an Australian state or territory.*

This unit can be undertaken in conjunction with the qualification listed above, provided all requirements for completion of the Certificate III qualification are met prior to issuing this unit.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Refer to Application.

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain synchronous condensers	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are reviewed and determined
	1.2 Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.7 Worksite is prepared in accordance with the work plan and workplace requirements
2 Maintain synchronous condensers	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.4	Synchronous condensers are maintained in accordance with workplace requirements
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSB31 Maintain high voltage power system synchronous condensers.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSB016 Maintain synchronous condensers

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- maintaining at least one (1) of the following windings:
  - stator
  - rotor
- maintaining at least one (1) of the following starter systems:
  - static frequency converter
  - variable speed drive
- maintaining at least one (1) of the following systems:
  - control
  - protection and alarm
  - excitation/automatic voltage regulator (AVR)
- maintaining the following systems:
  - cooling
  - lubrication.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- evaluation of equipment serviceability
- identification and procurement of materials and apparatus
- operational manuals and system diagrams
- stator and rotor windings, including:
  - types
  - characteristics
  - maintenance requirements
  - insulation measurement
  - common defects and rectification
- starter systems, including:
  - types
  - characteristics
  - maintenance requirements
  - insulation measurement
  - common defects and rectification
- control systems, including:
  - types
  - characteristics
  - maintenance requirements
  - common defects and rectification
  - excitation/AVR
- protection and alarm systems, including:
  - types
  - characteristics
  - maintenance requirements
  - secondary signal injection tests
  - common defects and rectification
- substation fundamentals, including:
  - transformers
  - on-load tap changers (OLTC)
  - balancing reactive plant

- additional components of synchronous condensers, including:
  - prime mover
  - flywheel
  - starter motor
  - clutch
  - hydraulic/pneumatic starter
  - dynamic braking
- system, plant and component diagrams/plans, drawings and manuals
- specialised tools, including:
  - types, construction and function
  - calibration
  - care and maintenance
- fault conditions and symptoms, including:
  - types and typical fault conditions
  - interpretation of mechanical faults
  - interpretation of electrical faults
  - auxiliary systems
  - protection and alarm systems
- synchronous condenser principles, including:
  - ratings
  - control systems
  - synchronising
  - components and ancillary equipment
  - cooling and lubrication systems
  - types, characteristics and capabilities
  - associated control housings
  - serviceability of components
  - operating constraints.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy

requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO012 Coordinate and manage distribution and sub-transmission network access and activities

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to coordinate distribution and sub-transmission network access and activities in the electricity supply industry (ESI).

It includes making coordination and management decisions for work plans, in accordance with best outcomes, safety control measures, and workplace requirements.

It also includes types, characteristics and capabilities of electrical apparatus, sources of possible back-feed, high voltage (HV) isolation and earthing procedures, and operating agreements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRSO015 Develop and validate distribution and sub-transmission switching programs

UETDRSO016 Develop and validate low voltage switching programs

UETDRSO020 Operate SCADA equipment

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to coordinate and manage distribution and sub-transmission network access and activities	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Purpose of the coordination is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
	1.3 Work plans are obtained and confirmed in accordance with workplace requirements
	1.4 Systems modelling is used to evaluate and determine best outcomes for work plans in accordance with workplace requirements
	1.5 Work roles and tasks are determined according to requirements and individual competencies
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.8 Hazards are identified, risks assessed, and control measures identified and applied
	1.9 Work permits are determined in accordance with workplace requirements
2 Coordinate and manage distribution and sub-transmission network access and activities	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored

	2.2 Work plans are evaluated and monitored for best outcomes in accordance with workplace requirements
	2.3 Coordination and management decisions are made in accordance with best outcomes, safety control measures, and workplace requirements
	2.4 Work teams are coordinated according to best outcomes, individual competencies and workplace requirements
	2.5 Work permits are received and signed in accordance with workplace requirements
	2.6 Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements
	3.3 Work permits are signed off in accordance with workplace requirements
	3.4 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSO001 Coordinate high voltage distribution and sub-transmission networks.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO012 Coordinate and manage distribution and sub-transmission network access and activities

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- evaluating and monitoring work plans for best outcomes in accordance with workplace requirements
- making coordination decisions in accordance with best outcomes, safety control measures, and workplace requirements
- coordinating and managing at least one (1) work team according to best outcomes, individual competencies and workplace requirements
- coordinating and managing one (1) work plan for access to each of the following:
  - high voltage (HV) transformer
  - HV switchgear
  - HV lines
  - HV bus
- coordinating and managing one (1) work plan, which considers at least two (2) of the following:
  - commissioning of HV plant
  - planned interruption to HV customer
  - installation of a mobile generator
  - consideration of paralleling feeders
  - HV switching impact on low voltage (LV) customers

    - HV capacitors
    - HV regulators
- managing all of the following for each of the work plans:
    - load
    - voltage
    - system reliability
    - critical customers
- completing all of the following:
    - checking switching instructions
    - calculating plant loading
    - monitoring switching progress
    - monitoring the status of access permits and authorities
    - ensuring network plant operates within specifications
    - applying and administrating supervisory control and data acquisition (SCADA)
    - meeting paralleling conditions for interconnected networks.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including possible hazards
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- application, purpose, and types of permits, and access authority procedures
- coordination and management of work teams for best outcomes, individual competencies and workplace requirements
- interconnected HV electrical networks, including fundamentals of HV single wire earth return (SWER) system
- principles of harmonics
- principles of resonant networks
- fault levels and settings
- load calculation
- operating agreements
- types, characteristics and capabilities of electrical apparatus
- types, characteristics and capabilities of specialised tools and testing equipment
- manuals, system diagrams, plans and drawings
- HV switching principles, including:
    - HV switching operator responsibilities

- sources of possible back-feed
- restrictions on electrical apparatus
- HV isolation procedures
- HV earthing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate computerised electrical plant control and monitoring facilities currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice, operational event data, network drawings, crisis management procedures and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO013 Coordinate and manage transmission network access and activities

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to coordinate and manage transmission network access and activities in the electricity supply industry (ESI).

It includes making coordination and management decisions for work plans, in accordance with best outcomes, safety control measures, and workplace requirements.

It also includes types, characteristics and capabilities of electrical apparatus, sources of possible back-feed, extra high voltage (EHV) isolation and earthing procedures, and operating agreements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRSO017 Develop and validate transmission switching programs

UETDRSO020 Operate SCADA equipment

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to coordinate and manage transmission network access and activities	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Purpose of the coordination and management is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
	1.3 Work plans are obtained and confirmed in accordance with workplace requirements
	1.4 Systems modelling is used to evaluate and determine best outcomes for work plans in accordance with workplace requirements
	1.5 Work roles and tasks are determined according to requirements and individual competencies
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
	1.8 Hazards are identified, risks assessed, and control measures identified and applied
	1.9 Work permits are determined in accordance with workplace requirements
2 Coordinate and manage transmission network access and activities	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored

	2.2	Work plans are evaluated and monitored for best outcomes in accordance with workplace requirements
	2.3	Coordination and management decisions are made in accordance with best outcomes, safety control measures, and workplace requirements
	2.4	Work teams are coordinated and managed according to best outcomes, individual competencies and workplace requirements
	2.5	Work permits are received and signed in accordance with workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSO002 Coordinate high voltage transmission

network.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO013 Coordinate and manage transmission network access and activities

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- evaluating and monitoring work plans for best outcomes in accordance with workplace requirements
- making coordination and management decisions in accordance with best outcomes, safety control measures, and workplace requirements
- coordinating and managing at least one (1) work team according to best outcomes, individual competencies and workplace requirements
- coordinating and managing one (1) work plan for access to each of the following:
  - extra high voltage (EHV) transformer
  - EHV switchgear
  - EHV lines
  - EHV bus
- coordinating and managing one (1) work plan, which considers at least two (2) of the following:
  - commissioning of EHV plant
  - planned interruption to EHV customer
  - installation of a mobile generator
  - consideration of paralleling feeders
  - EHV switching impacts
  - EHV capacitors

    - EHV regulators
- managing all of the following for each of the work plans:
    - load
    - voltage
    - system reliability
    - critical customers
- completing all of the following:
    - checking switching instructions
    - calculating plant loading
    - monitoring switching progress
    - monitoring the status of access permits and authorities
    - ensuring network plant operates within specifications
    - applying and administrating supervisory control and data acquisition (SCADA)
    - meeting paralleling conditions for interconnected networks.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including possible hazards
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- application, purpose, and types of permits, and access authority procedures
- coordination and management of work teams for best outcomes, individual competencies and workplace requirements
- interconnected EHV electrical networks
- manuals, system diagrams, plans and drawings
- types, characteristics and capabilities of electrical apparatus
- types, characteristics and capabilities of specialised tools and testing equipment
- fault levels and settings
- load calculation
- operating agreements
- principles of harmonics
- principles of resonant networks
- EHV switching principles, including:
    - EHV switching operator responsibilities
    - alternative sources of supply
    - restrictions on electrical apparatus

- EHV isolation procedures
- EHV earthing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice, network drawings, operational event data and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO014 Coordinate operations in a regulated energy market

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to coordinate operations in a regulated energy market in the electricity supply industry (ESI).

It includes energy market principles, procedures, and objectives, including electricity pool, market pricing concepts, bidding, scheduling and dispatching energy.

It also includes market fluctuations and interventions, network constraints, loss factors, and contractual obligations of service providers.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to coordinate operations in a regulated energy market	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Purpose of the coordination is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
	1.3 Systems modelling is used to evaluate and determine best outcomes for work plans in accordance with workplace requirements
	1.4 Control procedures are discussed and communicated with appropriate personnel to establish workplan
	1.5 Testing parameters are determined in accordance with workplace requirements
	1.6 Work roles and tasks are allocated according to requirements and individual competencies
	1.7 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.8 Liaison and communication issues with others/authorised personnel, authorities and clients are resolved and activities coordinated to carry out work
	1.9 Hazards are identified, risks assessed, and control measures identified and applied
	1.10 Work permits are determined in accordance with workplace requirements
2 Coordinate operations in a regulated energy market	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work plans are evaluated and monitored for best outcomes in accordance with workplace requirements
	2.3 Coordination decisions are made in accordance with best outcomes, safety control measures, and workplace

		requirements
	2.4	All stakeholders are kept informed of progress
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.6	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSO003 Coordinate power system operations in a regulated energy market.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO014 Coordinate operations in a regulated energy market

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- demonstrating on at least three (3) occasions the following:
  - analysing energy market price data
  - placing bid depending on bid stack and dispatch
  - dispatching energy to the electricity market
  - responding to electricity market fluctuations
  - assessing network constraints
  - manipulating system for optimal energy dispatch.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including possible hazards
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation

- energy principles and practices
- sustainable energy principles and practices
- principles and objectives of the electricity market
- the role of ancillary services in the operation of the electricity market
- generation systems, including:
  - methods of generating electricity
  - types, characteristics, constraints
  - supply versus demand
- energy market principles, procedures, and objectives, including:
  - electricity pool
  - analysing energy market price
  - analysis of pricing concepts
  - service provider obligations
  - bidding
  - scheduling and dispatching energy
  - market fluctuations
  - network constraints
  - ancillary services
  - connection and access requirements
  - contractual obligations and operating agreements
  - market interventions
  - loss factors.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice, relevant modelling tools, drawings and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO015 Develop and validate distribution and sub-transmission switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to develop and validate distribution and sub-transmission switching programs in the electricity supply industry (ESI).

It includes types, characteristics and capabilities of electrical apparatus, sources of possible back-feed, high voltage (HV) isolation and earthing procedures, and operating agreements.

It also includes establishing the purpose of the HV switching program, procedures for analysing data, and writing a switching program.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to develop and validate distribution and sub-transmission switching programs	**1.1** Purpose for the distribution and sub-transmission switching program is determined
	1.2 Data is analysed and expected work outcomes are determined
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work plan is developed, validated and communicated with stakeholders in accordance with workplace requirements
	1.5 Equipment required for work is determined in accordance with work plan and workplace requirements
	1.6 Work permits are determined in accordance with workplace requirements
	1.7 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.8 Operational personnel requirements are determined in accordance with workplace requirements
	1.9 Liaison and communication issues with stakeholders are resolved
2 Develop and validate distribution and sub-transmission switching programs	**2.1** Available resources are used to determine best outcomes, in accordance with workplace requirements
	2.2 Distribution and sub-transmission switching programs are developed and validated in accordance with workplace requirements
	2.3 Work plan is checked for compliance against technical advice, legislation, regulations, standards and codes of practice

	2.4	Health and safety risks are identified and minimised or eliminated by using safety and control measures
	2.5	Ongoing quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSO005 Develop high voltage distribution and sub-transmission switching programs.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO015 Develop and validate distribution and sub-transmission switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- establishing the purpose of the distribution and sub-transmission switching program
- analysing data and determining expected work outcome
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- confirming, reviewing, and updating workplan, based on technical advice, site inspection, and data analysis
- determining equipment required for the work
- prioritising and sequencing work
- checking completed work for compliance against the work plan and workplace requirements
- completing relevant work records, reports and documentation
- using available resources to determine best outcomes
- using and interpreting single line diagrams (SLD)
- demonstrating one (1) switching program for each of the following:
  - high voltage (HV) transformer
  - HV switchgear
  - HV lines and feeders
- demonstrating one (1) switching program, which considers at least two (2) of the following:
  - commissioning of HV plant
  - planned interruption to HV customer
  - installation of a mobile generator
  - consideration of paralleling feeders
  - HV switching impact on low voltage (LV) customers
  - HV capacitors
  - HV regulators
- preparing switching programs to isolate, test and earth all the following:
  - HV transformer
  - HV switchgear

    - HV lines
- preparing, writing and validating a switching program, to include managing all of the following:
    - load
    - voltage
    - system reliability
    - critical customers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- purpose of the HV switching program
- data analysis
- hazard, risk assessment and risk control requirements, including potential hazards
- operational personnel requirements
- application, purpose, and types of permits
- work records, reports and documentation
- writing switching programs
- interconnected HV electrical networks
- principles of HV single wire earth return (SWER) system
- principles of harmonics
- principles of resonant networks
- HV switching principles, including:
    - HV switching operator responsibilities
    - manuals, system diagrams, plans and drawings
    - types, characteristics and capabilities of electrical apparatus
    - types, characteristics and capabilities of specialised tools and testing equipment
    - sources of possible back-feed
    - restrictions on electrical apparatus
    - HV isolation procedures
    - HV earthing procedures
    - fault levels and settings
    - load calculation
    - operating agreements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate computerised electrical plant control and monitoring facilities currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice, operational event data, network drawings, crisis management procedures and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO016 Develop and validate low voltage switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to develop and validate low voltage (LV) switching programs in the electricity supply industry (ESI).

It includes types, characteristics and capabilities of electrical apparatus, sources of possible back-feed, LV isolation and earthing procedures, and operating agreements.

It also includes establishing the purpose of the LV switching program, procedures for analysing data, and writing a switching program.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to develop and validate LV switching programs	**1.1** Purpose for the LV switching program is established
	1.2 Data is analysed and expected work outcomes are determined
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work plan is developed, validated and communicated with stakeholders in accordance with workplace requirements
	1.5 Equipment required for work is determined in accordance with work plan and workplace requirements
	1.6 Work permits are determined in accordance with workplace requirements
	1.7 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.8 Operational personnel requirements are determined in accordance with workplace requirements
	1.9 Liaison and communication issues with stakeholders are resolved
2 Develop and validate LV switching programs	**2.1** Available resources are used to determine best outcomes, in accordance with workplace requirements
	2.2 LV switching programs are developed and validated in accordance with workplace requirements
	2.3 Work plan is checked for compliance against technical advice, legislation, regulations, standards and codes of practice
	2.4 Health and safety risks are identified and minimised or eliminated by using safety and control measures
	2.5 Ongoing quality checks of work are undertaken in

		accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSO006 Develop low voltage distribution switching programs.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO016 Develop and validate low voltage switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- establishing the purpose of the low voltage (LV) switching program
- analysing data and determining expected work outcome
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- confirming, reviewing, and updating workplan, based on technical advice, site inspection, and data analysis
- determining equipment required for the work
- prioritising and sequencing work
- checking completed work for compliance against the work plan and workplace requirements
- completing relevant work records, reports and documentation
- using available resources to determine best outcomes
- using and interpreting single line diagrams (SLD)
- preparing, writing and validating one (1) switching program for each of the following:
  - LV transformer
  - LV switchgear
  - LV lines and feeders
- preparing, writing and validating one (1) switching program, which considers at least two (2) of the following:
  - commissioning of LV plant
  - planned interruption to LV customer
  - installation of a mobile generator
  - consideration of paralleling feeders
  - impact on customers
  - LV capacitors
  - LV regulators
- preparing switching programs to isolate, test and earth all the following:
  - LV transformer

  - LV switchgear
  - LV lines and feeders
- preparing, writing and validating a switching program, to include managing all of the following:
  - load
  - voltage
  - system reliability
  - critical customers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- purpose of the LV switching program
- data analysis
- hazard, risk assessment and risk control requirements, including potential hazards
- operational personnel requirements
- application, purpose, and types of permits
- work records, reports and documentation
- writing switching programs
- interconnected LV electrical networks
- principles of LV single wire earth return (SWER) system
- principles of harmonics
- principles of resonant networks
- LV switching principles, including:
  - LV switching operator responsibilities
  - manuals, system diagrams, plans and drawings
  - types, characteristics and capabilities of electrical apparatus
  - types, characteristics and capabilities of specialised tools and testing equipment
  - sources of possible back-feed
  - restrictions on electrical apparatus
  - LV isolation procedures
  - LV earthing procedures
  - fault levels and settings
  - load calculation
  - operating agreements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate equipment, computerised electrical plant control and monitoring facilities currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice, operational event data, network drawings, crisis management procedures and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO017 Develop and validate transmission switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to develop and validate transmission switching programs, in the electricity supply industry (ESI).

It includes types, characteristics and capabilities of electrical apparatus, sources of possible back-feed, extra high voltage (EHV) isolation and earthing procedures, and operating agreements.

It also includes establishing the purpose of the EHV switching program, procedures for analysing data, and writing a switching program.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to develop and validate transmission switching programs	**1.1** Purpose for the transmission switching program is established in accordance with workplace requirements
	1.2 Data is analysed and expected work outcomes are determined
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work plan is developed, validated and communicated with stakeholders in accordance with workplace requirements
	1.5 Equipment required for work is determined in accordance with work plan and workplace requirements
	1.6 Work permits are determined in accordance with workplace requirements
	1.7 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.8 Operational personnel requirements are determined in accordance with workplace requirements
	1.9 Liaison and communication issues with stakeholders are resolved
2 Develop and validate transmission switching programs	**2.1** Available resources are used to determine best outcomes, in accordance with workplace requirements
	2.2 Transmission switching programs are developed and validated in accordance with workplace requirements
	2.3 Work plan is checked for compliance against technical advice, legislation, regulations, standards and codes of practice
	2.4 Health and safety risks are identified and minimised or eliminated by using safety and control measures

	2.5	Ongoing quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSO004 Develop and evaluate power systems transmission switching programs.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO017 Develop and validate transmission switching programs

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- establishing the purpose of the transmission switching program
- analysing data and determining expected work outcome
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- confirming, reviewing, and updating workplan, based on technical advice, site inspection, and data analysis
- determining equipment required for the work
- determining work permits in accordance with workplace requirements
- prioritising and sequencing work
- checking completed work for compliance against the work plan and workplace requirements
- completing relevant work records, reports and documentation
- using available resources to determine best outcomes
- using and interpreting single line diagrams (SLD)
- preparing, writing and validating one (1) switching program for each of the following:
  - extra high voltage (EHV) transformer
  - EHV switchgear
  - EHV lines and feeders
- preparing, writing and validating one (1) switching program, which considers at least two (2) of the following:
  - commissioning of EHV plant
  - planned interruption to EHV customer
  - installation of a mobile generator
  - consideration of paralleling feeders
  - EHV switching impact on low voltage (LV) customers
  - EHV capacitors
  - EHV regulators
- preparing switching programs to isolate, test and earth all the following:

  - EHV transformer
  - EHV switchgear
  - EHV lines and feeders
- preparing, writing and validating a switching program, to include managing all of the following:
  - load
  - voltage
  - system reliability
  - critical customers.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- purpose of the EHV switching program
- data analysis
- hazard, risk assessment and risk control requirements, including potential hazards
- operational personnel requirements
- application, purpose, and types of permits
- work records, reports and documentation
- writing switching programs
- interconnected EHV electrical networks
- principles of EHV single wire earth return (SWER) system
- principles of harmonics
- principles of resonant networks
- fault levels and settings
- load calculation
- operating agreements
- types, characteristics and capabilities of specialised tools and testing equipment
- types, characteristics and capabilities of electrical apparatus
- EHV switching principles, including:
  - EHV switching operator responsibilities
  - alternative sources of supply
  - restrictions on electrical apparatus
  - EHV isolation procedures
  - EHV earthing procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment, computerised electrical plant control and monitoring facilities currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice, modelling tools, drawings and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO018 Dispatch and monitor field staff activities

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to dispatch and monitor field staff activities in the electricity supply industry (ESI).

It includes evaluating alarms, indicators, trouble calls and outage data, analysing data against network conditions, and dispatching and monitoring personnel.

It also includes application, purpose, and types of permits and access authority procedures, and procedures for updating personnel, management and customers of progress.

This may include immediate response to protect human life, adverse effect on safety, security of supply or the integrity of the assets.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

System Operations

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1	**Prepare to dispatch and monitor field staff activities**	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
		1.2 Purpose of the dispatch is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
		1.3 Work plans are determined in accordance with workplace requirements
		1.4 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
		1.5 Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
		1.6 Hazards are identified, risks assessed, and control measures identified and applied
2	**Dispatch and monitor field staff activities**	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
		2.2 Work plans are evaluated and monitored for best outcomes in accordance with workplace requirements
		2.3 Dispatching decisions are made in accordance with best outcomes, safety control measures, and workplace requirements
		2.4 Field staff activities are monitored in accordance with workplace requirements
		2.5 All stakeholders are updated on progress
		2.6 Incidents or unplanned events are responded to in accordance with workplace requirements
		2.7 Quality checks of work are undertaken in accordance with work plan and workplace requirements
3	**Complete work and documentation**	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
		3.2 Work records, reports and documentation are completed, and appropriate personnel notified in

accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSO46 Monitor and control the field staff activities.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO018 Dispatch and monitor field staff activities

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- dealing with unplanned events on at least one (1) occasion
- completing all of the following on at least three (3) occasions:
  - evaluating alarms, indicators, trouble calls and outage data
  - analysing data against network conditions
  - establishing the purpose of the dispatch
  - prioritising and sequencing dispatch
  - dispatching teams in accordance with skills and capabilities
  - monitoring work progress in accordance with the work plan
  - updating personnel, management and customers of progress
  - confirming, reviewing, and updating workplan
  - completing relevant work records, reports and documentation
  - checking completed work for compliance against the work plan and workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- events constituting an unplanned event or incident

- procedures for responding to an unplanned event or incident
- interconnected high voltage (HV) electrical networks, including HV single wire earth return (SWER) system
- principles of harmonics
- application, purpose, and types of permits, and access authority procedures
- work team requirements, dispatching, and monitoring
- stakeholder communication
- workplace records, reports and documentation.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO019 Manage supply and demand in distribution and sub-transmission networks

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to manage supply and demand in distribution and sub-transmission networks in the electricity supply industry (ESI).

It includes supply and demand management for sub-transmission and distribution network constraints, including entire networks, sub-transmission lines, transformers, distribution lines, or switchgear.

It also includes procedures for each of the demand management actions, including load, voltage, system reliability, and critical customers.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRSO012 Coordinate and manage distribution and sub-transmission network access and activities

UETDRSO015 Develop and validate distribution and sub-transmission switching programs

UETDRSO020 Operate SCADA equipment

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to manage supply and demand in distribution and sub-transmission networks	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Purpose of the management is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
	1.3 Work plan is obtained and confirmed in accordance with workplace requirements, and where relevant, communicated to the appropriate personnel
	1.4 Work roles and tasks are determined according to requirements and individual competencies
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Liaison and communication issues with authorised personnel, authorities and clients are resolved to perform work, as required
	1.7 Hazards are identified, risks assessed, and control measures identified and applied
	1.8 Work permits are determined in accordance with workplace requirements
2 Manage supply and demand in distribution and sub-transmission networks	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements

	2.3	Supply and demand in distribution and sub-transmission networks is managed in accordance with workplace requirements
	2.4	All stakeholders are updated on progress
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSO007 Manage high voltage distribution and sub-transmission network demand.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO019 Manage supply and demand in distribution and sub-transmission networks

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation
- demonstrating at least three (3) demand management actions for sub-transmission and distribution network constraints that include the following:
  - sub-transmission lines
  - transformers
  - distribution lines
  - switchgear
- managing all of the following for each of the demand management actions:
  - load
  - voltage
  - system reliability
  - critical customers
- coordinating, prioritising and communicating network planned and unplanned work, with relevant personnel
- monitoring the status of access authorities and permits
- demonstrating application of supply and demand management tools
- meeting paralleling conditions for interconnected networks
- updating personnel, management and customers of progress.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of

the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- application, purpose, and types of permits and access authorities
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- manuals, diagrams and drawings
- use of supply and demand management tools
- coordination, prioritisation, and communication of network planned and unplanned work
- communication with personnel, management and customers
- paralleling of interconnected networks
- actions and documentation for supply and demand management for sub-transmission and distribution network constraints, including:
  - sub-transmission lines
  - transformers
  - distribution lines
  - switchgear
- demand management actions, including:
  - load
  - voltage
  - system reliability
  - critical customers.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment, protection, control, metering and alarm equipment, computerised electrical plant control and monitoring facilities, and personal protective equipment (PPE) currently used in industry

- applicable documentation including, workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice, operational event data, network drawings, crisis management procedures and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO020 Operate SCADA equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to operate supervisory control and data acquisition (SCADA) equipment in the electricity supply industry (ESI).

It includes setting limits, operational parameters, alarms and events, control schemes, and communication with relevant personnel.

It also includes switching programs, feedback, extracting network data, testing and commissioning, failover, and dealing with unplanned events.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to operate	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the

SCADA equipment		work to be done are reviewed and determined
	1.2	System monitoring and control procedures are discussed with relevant personnel in accordance with workplace procedures
	1.3	Operational parameters are determined in accordance with workplace requirements
	1.4	Work roles and tasks are determined according to requirements and individual competencies
	1.5	Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.6	Liaison and communication issues with others/authorised personnel, authorities and clients are resolved and activities coordinated to carry out work
	1.7	Hazards are identified, risks assessed, and control measures identified and applied
2 Operate SCADA equipment	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	SCADA equipment is operated in accordance with workplace requirements
	2.3	SCADA information accuracy is evaluated in accordance with workplace requirements
	2.4	The effectiveness of operations is analysed for best outcomes in accordance with workplace requirements
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against workplace requirements
	3.2	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRSO45 Operate and monitor system SCADA equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO020 Operate SCADA equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation
- performing on at least three (3) occasions all of the following:
  - determine operational parameters
  - interpret alarms, events and indicators
  - evaluate information accuracy
  - respond using available technology
  - communicate with relevant personnel
  - enable/disable control schemes
  - execute switching programs
  - analyse supervisory control and data acquisition (SCADA) feedback
- performing on at least two (2) occasions all of the following:
  - test and commission new SCADA interface
  - deal with an unplanned event
- demonstrating all of the following:
  - manage SCADA configuration
  - extract network data for analysis of network loading trends.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- SCADA systems, including:
  - configuration and failover
  - features and applications
  - display functions and capabilities
  - SCADA point configuration
  - setting limits
  - alarm and event logging
  - control scheme parameters
  - trending data.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools and SCADA equipment currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRSO021 Respond to protection operations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to respond to protection operations in the Electrical Supply Industry (ESI).

It includes protection scheme types, principles, purpose and components.

It also includes interpreting, evaluating and responding to information about network configuration, relay operations, resource and equipment capabilities, and weather.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDRSO020 Operate SCADA equipment

Competency Field

System Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to respond to protection operations	**1.1** Purpose of the response is established after data is analysed
	1.2 Purpose of response is communicated with relevant personnel to determine the scope of work in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed, and control measures identified and applied
	1.4 Work plan for response is confirmed and communicated with relevant personnel in accordance with workplace requirements
	1.5 Work permits are determined in accordance with workplace requirements
	1.6 Response is prioritised and sequenced in accordance with workplace requirements
	1.7 Work is allocated in accordance with skills and capabilities, in accordance with workplace requirements
2 Respond to protection operations	**2.1** Work is performed in accordance with work plan and workplace requirements
	2.2 Purpose of response is reviewed and work plan is updated based on technical advice and data analysis, according to workplace requirements
	2.3 Work permits are issued in accordance with workplace requirements
	2.4 All stakeholders are updated on progress
	2.5 Hazard control measures are monitored in accordance with workplace requirements
	2.6 Incidents or unplanned events are responded to in accordance with workplace requirements
	2.7 Work progress is monitored in accordance with work plan and workplace requirements

3 Complete work and documentation	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSO010 Respond to complex power system protection operations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRSO021 Respond to protection operations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- establishing the purpose of the response
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- confirming, reviewing, and updating workplan, based on technical advice and data analysis
- determining and issuing work permits
- prioritising and sequencing response
- allocating work in accordance with skills and capabilities
- updating stakeholders
- dealing with an unplanned event on at least one (1) occasion
- monitoring work progress in accordance with the work plan
- checking completed work for compliance against the work plan and workplace requirements
- obtaining and issuing relevant work permits
- completing relevant work records, reports and documentation
- responding on at least three (3) occasions, to all the following:
  - relay operations
  - event data
  - alarms
- interpreting on at least three (3) occasions, all of the following:
  - resource capabilities
  - equipment capabilities
  - network configuration
  - weather.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- response purpose, sequencing and prioritisation
- operational personnel requirements and management
- hazard, risk assessment and risk control requirements, including potential hazards
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- work records, reports and documentation
- relay operations, event data and alarms
- resource and equipment capabilities, network configuration, and weather
- stakeholder communication
- purpose of a protection scheme, including:
  - safety of persons
  - protection of plant
  - system stability
  - maintaining customer supply
  - reliability
- protection scheme principles, including:
  - purpose of protection
  - protection zones
  - duplicate protection
  - backup protection
  - selectivity
  - discrimination
  - sensitivity
  - reliability
- protection scheme components, including
  - current and potential transformers
  - relays
  - sensors
  - communication
- protection scheme types, including:
  - overcurrent
  - overvoltage
  - differential
  - biased differential
  - earth leakage
  - structure leakage
  - gas
  - restricted earth-fault
  - distance
  - auto-reclose

- pilot wire
- directional
- directional overcurrent
- phase comparison
- current comparison.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment, computerised electrical plant control and monitoring facilities, and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice, drawings and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO004 Inspect and maintain transmission overhead network

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit consolidates critical knowledge and skills developed throughout the term of the qualification to inspect and maintain transmission overhead network in the electricity supply industry (ESI).

It includes inspection and maintenance of de-energised and isolated transmission overhead network in accordance with workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under State and Territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

CPCCLDG3001 Licence to perform dogging

CPCCLRG3001 Licence to perform rigging basic level

TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTO005 Inspect transmission structures, conductors and hardware

UETDRTO006 Install and maintain transmission conductors

UETDRTO007 Install and maintain transmission structures and hardware

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to inspect and maintain transmission overhead network	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Work permits are received and signed in accordance with workplace requirements
	1.8 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements

	1.9	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.10	Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.11	Worksite is prepared in accordance with the work plan and workplace requirements
	1.12	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Inspect transmission overhead network	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools and equipment are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Transmission overhead network is inspected in accordance with work plan and workplace requirements
	2.7	Safe approach distances are maintained when the work is being performed
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Maintain transmission overhead network	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Lifting, working at heights and the use of plant, tools and equipment are carried out in accordance with

		workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements
	3.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	3.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	3.6	Working earths are installed in accordance with workplace requirements
	3.7	Transmission overhead network is maintained in accordance with work plan and workplace requirements
	3.8	Safe approach distances are maintained when the work is being performed
	3.9	All earths are removed and work permits signed off and transmission overhead network re-energised in accordance with workplan and workplace requirements
	3.10	Incidents or unplanned events are responded to in accordance with workplace requirements
	3.11	Quality checks of work are undertaken in accordance with work plan and workplace requirements
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTP99 Test and verify transmission overhead installations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO004 Inspect and maintain transmission overhead network

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- undertaking inspections of transmission overhead network using at least two (2) of the following methods:
  - visual
  - infra-red camera
  - X-ray
  - camera
  - binoculars/telescope
  - remotely piloted aircraft (RPA)
  - thermographic
- maintaining transmission overhead network including:
  - insulators (strains/termination and suspension)
  - bolts
  - structural components
- installing working earths in accordance with workplace requirements
- undertaking work activities from at least one (1) of the following:
  - elevated work platform (EWP)
  - temporary work platform
  - structure

- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice, and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of work permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- inspection procedures
- maintenance procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for inspecting and maintaining transmission overhead network
- network construction and network supply standards
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO005 Inspect transmission structures, conductors and hardware

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to inspect transmission structures, conductors and hardware in the electricity supply industry (ESI).

It includes the inspection of transmission poles and towers, conductors, underground and overhead transition points, hardware and earthing systems in accordance with work plan and workplace requirements.

It also includes the completion of inspection reports and other relevant documentation in accordance with requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for the inspection of transmission structures, conductors and hardware	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Liaison and communication with stakeholders is carried out in accordance with workplace requirements
2 Carry out inspection of transmission structures, conductors and hardware	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Working at heights and use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Inspection of structures, conductors and hardware is carried out in accordance with the work plan and workplace requirements
	2.5 Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against the work plan and workplace requirements
	3.2 Incidents or unplanned events are reported in accordance with workplace requirements

3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements

3.4 Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements

3.5 Work permits are completed in accordance with workplace requirements

3.6 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTP30 Inspect transmission overhead structures and electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO005 Inspect transmission structures, conductors and hardware

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- organising and completing relevant work permits in accordance with workplace requirements
- undertaking inspections of structures, conductors and hardware using at least two (2) of the following methods:
  - visual
  - infra-red camera
  - X-ray
  - camera
  - binoculars/telescope
  - remote piloted aircraft (RPA)
  - thermographic
- recording inspection results in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS

  - safe approach distances
  - construction design clearances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- deterioration of structures, conductors and hardware, including:
  - relationship between steel, concrete and other materials
  - deterioration in steel and concrete
  - inspection procedures for deterioration
- inspection methods and techniques for:
  - below ground
  - ground level
  - above ground
  - reporting.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used for inspecting transmission structures, conductors and hardware
- applicable documentation, including workplace requirements, relevant industry standards, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO006 Install and maintain transmission conductors

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain transmission conductors in the electricity supply industry (ESI).

It includes installing and maintaining de-energised and isolated conductors and hardware used on towers and poles, including stringing, tensioning, terminating and performing the electrical connections.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

CPCCLRG3001 Licence to perform rigging basic level

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTO007 Install and maintain transmission structures and hardware

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for installation and maintenance of transmission conductors	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks assessed and control measures identified and applied
	1.6 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.10 Work permits are received and signed in accordance with workplace requirements
	1.11 Worksite is prepared in accordance with the work plan and workplace requirements
	1.12 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out installation of	**2.1** Legislation, regulations, standards, codes of practice and

transmission conductors		organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Working earths are installed in accordance with workplace requirements
	2.8	Conductors are strung, tensioned and terminated in accordance with workplace requirements
	2.9	Conductor hardware is installed in accordance with workplace requirements
	2.10	Electrical connections are made in accordance with the workplace requirements
	2.11	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.12	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out maintenance of transmission conductors	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	3.3	Hazard control measures are monitored in accordance with workplace requirements

	3.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	3.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	3.6	Safe approach distances are maintained when the work is being performed
	3.7	Working earths are installed in accordance with workplace requirements
	3.8	Conductors are repaired and/or replaced in accordance with workplace requirements
	3.9	Conductor hardware is replaced in accordance with workplace requirements
	3.10	Electrical connections are made in accordance with the workplace requirements
	3.11	Incidents or unplanned events are responded to in accordance with workplace requirements
	3.12	Quality checks of work are undertaken in accordance with work plan and workplace requirements
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6	Working earths are removed in accordance with workplace requirements
	4.7	Work permits are signed off in accordance with workplace requirements

4.8 Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTP29 Install and maintain transmission overhead conductors and cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO006 Install and maintain transmission conductors

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- installing and maintaining conductor
- working from at least two (2) of the following:
  - hook ladder*
  - elevated work platform (EWP)
  - portable platform
  - gondola
  - conductor trolley
  - helicopter
  - elevated work box (EWB)
  - (*must do)
- using at least five (5) of the following stringing equipment:
  - crimping equipment
  - conductor winches
  - lever hoist
  - conductor trailers/jinker
  - pre-formed splices
  - conductor drum stands
  - draw wire
  - rollers/sheaves

  - conductor grip
  - conductor stockings
  - swivels
- creating an equipotential zone in accordance with workplace requirements
- using testing equipment in accordance with workplace requirements
- using tensioning/sagging equipment in accordance with workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice, and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - working earths
- hazard, risk assessment and risk control requirements
- potential hazards, including:
  - induced voltages
  - currents
- types and application of PPE
- conductor types and characteristics
- conductor clearances
- stringing methods
- conductor protective hardware, including:
  - types and selection of common dampers, tools and equipment
  - control of Aeolian vibration
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for installing and maintaining transmission conductors
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO007 Install and maintain transmission structures and hardware

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to install and maintain transmission structures and hardware in the electricity supply industry (ESI).

It includes the installation and maintenance of de-energised and isolated transmission poles, towers and hardware in accordance with work plan, drawings and workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

CPCCLRG3001 Licence to perform rigging basic level

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to install and maintain transmission structures and hardware	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks are assessed and control measures identified and applied
	1.6 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.10 Work permits are received and signed in accordance with workplace requirements
	1.11 Worksite is prepared in accordance with the work plan and workplace requirements
	1.12 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out the installation	**2.1** Legislation, regulations, standards, codes of practice and

of transmission structures and hardware		organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed in accordance with workplace requirements
	2.7	Transmission structures and hardware are assembled and installed in accordance with construction plans, drawings and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Carry out the maintenance of transmission structures and hardware	**3.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	3.2	Working earths are installed in accordance with workplace requirements
	3.3	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	3.4	Hazard control measures are monitored in accordance with workplace requirements
	3.5	Safety observer is positioned to observe the work in accordance with workplace requirements
	3.6	Communication methods between workers and safety

		observer are used in accordance with workplace requirements
	3.7	Safe approach distances are maintained when the work is being performed
	3.8	Maintenance of structure and hardware is carried out in accordance with the work plan and workplace requirements
	3.9	Incidents or unplanned events are responded to in accordance with workplace requirements
	3.10	Quality checks of work are undertaken in accordance with work plan and workplace requirements
4 Complete work and documentation	**4.1**	Completed work is checked for compliance against the work plan and workplace requirements
	4.2	Incidents or unplanned events are reported in accordance with workplace requirements
	4.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	4.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	4.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	4.6	Work permits are signed off in accordance with workplace requirements
	4.7	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETTDRTP26 Install transmission structures and associated hardware and UETTDRTP27 Maintain transmission structures and associated hardware.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO007 Install and maintain transmission structures and hardware

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing at least two (2) types of structures
- installing all of the following hardware:
  - insulators
  - bolts
  - structural components
- maintaining at least two (2) types of structures
- maintaining at least two (2) types of hardware
- replacing at least two (2) of the following insulators:
  - strains/termination
  - suspension
  - post
  - V strings
- installing working earths in accordance with workplace requirements
- installing temporary work platform
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - transmission voltages
  - working earths
- hazard, risk assessment and risk control requirements, including potential hazards of:
  - induced voltages
  - currents
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- construction manuals, system diagrams/plans and drawings
- role and responsibilities of a safety observer
- types and location of structures
- types and function of hardware
- types and function of insulators
- types of foundations
- structure stabilisation methods
- calculation of conductor forces
- temporary work platforms
- conductor protective hardware, including:
  - types and selection of common dampers, tools and equipment
  - control of Aeolian vibration
- third-party assets used on transmission structures, e.g., mobile communication antenna.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic

and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for the installation and maintenance of transmission structures and hardware
- applicable documentation, including workplace requirements, relevant industry standards, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO010 Maintain energised transmission lines using barehand techniques from a helicopter

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain energised transmission lines using barehand techniques from a helicopter in the electricity supply industry (ESI).

It includes the calculation of physical loads and the use and maintenance of specialised tools and equipment, live work authorities/permits and disabling the automatic re-closing device.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDRTO012 Maintain energised transmission lines using live work stick techniques

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain energised transmission	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

lines from a helicopter		be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4	Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5	Hazards are identified, risks assessed and control measures identified and applied
	1.6	Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8	Minimum approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.10	Work permits are received and signed in accordance with workplace requirements
	1.11	Auto-reclose devices and associated circuits are rendered inoperative in accordance with workplace requirements
	1.12	Worksite is prepared in accordance with the work plan and workplace requirements
	1.13	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Perform maintenance of energised transmission lines from a helicopter	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Working at heights and the use of tools, equipment and PPE are carried out in accordance with workplace requirements

	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Minimum approach distances are maintained when the work is being performed
	2.5	Energised overhead electrical transmission apparatus is maintained in accordance with the work plan and workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.7	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements
	3.7	Works records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector

Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTP33 Maintain energised transmission lines using Barehand technique on a helicopter platform.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO010 Maintain energised transmission lines using barehand techniques from a helicopter

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - minimum approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- inspecting, fitting and testing conductive suit
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- calculating conductor load
- installing a working platform
- applying helicopter safety procedures
- confirming the electrical integrity of insulators
- completing at least three (3) of the following tasks using live work barehand techniques from a helicopter:
  - replacing/installing vibration damper
  - replacing/installing conductor spacers
  - replacing/installing conductor joint
  - replacing/installing helical repair splice
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of

the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - minimum approach distances
  - working on energised lines utilising live work barehand techniques from a helicopter
  - helicopter safety procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- roles and responsibilities of team members
- electrical and electrostatic principles, including:
  - relationship of the resistance of a human body to different levels of current and voltage
  - relationship of a human body to an electric field
  - effects of electrostatic induction
  - relationship of phase voltage and respective line voltages
  - effect of distance
  - potential of an object within the field and the effect of distances to the potential
  - Faraday's cage - effects of a body, advantages, description of the Faraday's cage used by barehand live line workers
  - lighting and switching surges
- application and function of extra-high voltage (EHV) auto-reclosing suppression
- testing, types, selection, maintenance and storage of specialised equipment:
  - conductive suit
  - tools
  - PPE
  - insulating sticks
- pilot briefing requirements:
  - emergency response and rescue
- techniques for working barehand on energised transmission lines from a helicopter
- requirements for aerial linework, including:
  - planning, establishing and implementing relevant aviation authority clearances
  - determining system requirements
  - aircrew familiarisation with network operations and equipment

    - effective communication
- electrical integrity of insulators including:
    - visual and audible assessment
    - disc voltage difference
    - condition of insulator string.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- materials, tools, equipment and PPE currently used for maintaining energised transmission lines using barehand techniques from a helicopter
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO011 Maintain energised transmission lines using live work barehand techniques

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain energised transmission lines using live work barehand techniques in the electricity supply industry (ESI).

It includes the calculation of physical loads and the use and maintenance of specialised tools and equipment, live work authorities/permits and disabling the automatic re-closing device.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDRTO012 Maintain energised transmission lines using live work stick techniques

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain energised transmission	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to

lines		be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4	Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5	Hazards are identified, risks assessed and control measures identified and applied
	1.6	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7	Work permits are received and signed in accordance with workplace requirements
	1.8	Auto-reclose devices and associated circuits are rendered inoperative in accordance with workplace requirements
	1.9	Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.10	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.11	Minimum approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.12	Worksite is prepared in accordance with the work plan and workplace requirements
	1.13	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Perform maintenance of energised transmission lines	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Minimum approach distances are maintained when the work is being performed
	2.7	Energised overhead electrical transmission apparatus is maintained in accordance with the work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements
	3.7	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTP32 Maintain energised transmission lines using high voltage live work Barehand method.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO011 Maintain energised transmission lines using live work barehand techniques

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - minimum approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- inspecting, fitting and testing conductive suit
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- calculating conductor load
- accessing work zone using at least two (2) of the following methods:
  - insulated ladder
  - elevated work platform (EWP)
  - elevated work box (EWB)
  - rope
- confirming the electrical integrity of insulators
- completing at least three (3) of the following tasks using live work barehand techniques:
  - replacing strain insulators*
  - replacing/connecting bridge/bonding connections*
  - replacing suspension insulators
  - replacing vibration dampers
  - repairing/replacing conductor spacers
  - repairing/replacing conductor joints
  - repairing conductors
  - (*must do)

- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - minimum approach distances
  - working on energised lines utilising live work barehand techniques
  - emergency response and rescue procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- roles and responsibilities of team members
- calculation of forces supported by live working equipment
- electrical and electrostatic principles, including:
  - relationship of the resistance of a human body to different levels of current and voltage
  - relationship of a human body to an electric field
  - effects of electrostatic induction
  - relationship of phase voltage and respective line voltages
  - effect of distance
  - potential of an object within the field and the effect of distances to the potential
  - Faraday's cage - effects of a body, advantages, description of the Faraday's cage used by bare hand live-line workers
  - lighting and switching surges
- application and function of extra-high voltage (EHV) auto-reclosing suppression
- testing, types, selection, maintenance and storage of specialised equipment:
  - conductive suit
  - insulated boom EWP
  - plant and tools
  - PPE
  - ropes

    - sticks
- live work barehand techniques for maintaining energised transmission lines in accordance with workplace requirements
- electrical integrity of insulators, including:
    - visual and audible assessment
    - disc voltage difference
    - condition of insulator string.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- materials, tools, equipment and PPE currently used for maintaining energised transmission lines using live work barehand techniques
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO012 Maintain energised transmission lines using live work stick techniques

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to maintain energised transmission lines using live work stick techniques in the electricity supply industry (ESI).

It includes the calculation of physical loads and the use and maintenance of specialised tools and equipment, live work authorities/permits and disabling the automatic re-closing device.

This unit is subject to the following requirements for entry:

- *Certificate III in ESI - Transmission Overhead powerline worker qualification or equivalent*.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable, refer to unit application.

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan to maintain energised transmission lines	**1.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4	Plant, tools, equipment, and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5	Hazards are identified, risks assessed and control measures identified and applied
	1.6	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7	Work permits are received and signed in accordance with workplace requirements
	1.8	Auto-reclose devices and associated circuits are rendered inoperative in accordance with workplace requirements
	1.9	Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.10	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.11	Minimum approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.12	Worksite is prepared in accordance with the work plan and workplace requirements
	1.13	Traffic management is confirmed as being in place in accordance with workplace requirements
2 Carry out the maintenance of energised transmission lines	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored

	2.2	Lifting, working at heights and use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Minimum approach distances are maintained when the work is being performed
	2.7	Energised overhead electrical transmission apparatus is maintained in accordance with the work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements
	3.7	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTP31 Maintain energised transmission lines using high voltage live work stick method.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO012 Maintain energised transmission lines using live work stick techniques

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - minimum approach distances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- confirming safety observer is in position in accordance with workplace requirements
- determining communication method with safety observer
- calculating conductor load
- accessing work zone using at least two (2) of the following methods:
  - insulated ladder
  - elevated work platform (EWP)
  - elevated work box (EWB)
  - structure
- confirming the electrical integrity of insulators
- replacing at least one (1) of the following:
  - strain insulators
  - suspension insulators
  - post insulators
- completing at least two (2) of the following tasks using live work stick techniques:
  - replacing/installing vibration dampers
  - repairing/replacing conductor spacers
  - repairing/replacing conductor fittings and hardware
  - applying pre-formed helical fittings
  - replacing cross-arms

- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - minimum approach distances
  - working on energised lines for voltages from 66 kV utilising live work stick techniques
  - emergency response and rescue procedures
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- roles and responsibilities of team members
- calculation of forces supported by live working equipment
- electrical and electrostatic principles, including:
  - relationship of the resistance of a human body to different levels of current and voltage
  - relationship of a human body to an electric field
  - effects of electrostatic induction
  - relationship of phase voltage and respective line voltages
  - effect of distance
  - potential of an object within the field and the effect of distances to the potential
  - lighting and switching surges
- application and function of extra-high voltage (EHV) auto-reclosing suppression
- testing, types, selection, maintenance, storage of specialised equipment, including:
  - plant and tools
  - PPE
  - ropes
  - sticks
- live stick work techniques for maintaining energised transmission lines in accordance with workplace requirements
- electrical integrity of insulators, including:

- visual and audible assessment
- disc voltage difference
- condition of insulator string.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- materials, tools, equipment and PPE currently used for maintaining of energised transmission lines using live work stick techniques
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO015 Assemble and erect transmission structures

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 3.0.

Application

This unit involves the skills and knowledge required for the assembly and erection of transmission structures in the electricity supply industry (ESI).

It includes the assembly and erection of transmission structures in accordance with construction plans, drawings and workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

CPCCLDG3001 Licence to perform dogging

CPCCLRG3001 Licence to perform rigging basic level

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL002 Comply with environmental requirements

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to assemble and erect transmission structures	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks are assessed and control measures identified and applied
	1.6 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.10 Work permits are signed in accordance with workplace requirements
	1.11 Worksite is prepared in accordance with the work plan and workplace requirements
2 Carry out the assembly and erection of transmission structures	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements

	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed in accordance with workplace requirements
	2.7	Transmission structures are assembled and erected in accordance with construction plans, drawings and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete the work	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements
	3.7	Personnel are notified of work completion in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTO002 Erect power systems transmission structures.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO015 Assemble and erect transmission structures

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 3.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
  - safe approach distances
- identifying hazards; assessing risks; and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- assembling transmission structure components
- erecting transmission structures
- dealing with an unplanned event on at least one (1) occasion
- signing on and off relevant work permits in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards of:
  - induced voltages
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident

- construction manuals, system diagrams/plans and drawings
- role and responsibilities of a safety observer
- types and location of structures
- structure stabilisation methods
- methods for assembly and erection of transmission structures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry to assemble and erect transmission structures
- applicable documentation, including workplace requirements, equipment specifications, standards and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO016 Install transmission structure hardware

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 3.0.

Application

This unit involves the skills and knowledge required for the installation of hardware used on transmission structures in the electricity supply industry (ESI).

It includes the installation of hardware on the transmission structures in accordance with construction plans and workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

CPCCLDG3001 Licence to perform dogging

CPCCLRG3001 Licence to perform rigging basic level

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL002 Comply with environmental requirements

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to install transmission structure hardware	**1.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2	Work plan is obtained and confirmed in accordance with workplace requirements
	1.3	Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4	Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5	Hazards are identified, risks are assessed and control measures identified and applied
	1.6	Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7	Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8	Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9	Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.10	Work permits are signed in accordance with workplace requirements
	1.11	Worksite is prepared in accordance with the work plan and workplace requirements
	1.12	Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out the installation of transmission structure hardware	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed in accordance with workplace requirements
	2.7	Transmission structure hardware is installed in accordance with construction plans, drawings and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete the work	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements
	3.7	Personnel are notified of work completion in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTO001 Erect power systems transmission structure hardware.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO016 Install transmission structure hardware

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 3.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
  - safe approach distances
- identifying hazards; assessing risks; and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing all of the following hardware:
  - insulators
  - bolts
- dealing with an unplanned event on at least one (1) occasion
- signing on and off relevant work permits in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards of:
  - induced voltages
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident

- procedures for responding to an unplanned event or incident
- construction manuals, system diagrams/plans and drawings
- role and responsibilities of a safety observer
- types of transmission structure hardware
- methods for installation of transmission structure hardware.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry to install transmission structure hardware
- applicable documentation, including workplace requirements, equipment specifications, standards and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTO017 String overhead transmission conductors

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 3.0.

Application

This unit involves the skills and knowledge required for the stringing of overhead conductors with no electrical connections being made in the electricity supply industry (ESI).

It includes the preparation of a stringing site, use of stringing equipment and stringing overhead conductors prior to tensioning and terminating.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

CPCCLDG3001 Licence to perform dogging

CPCCLRG3001 Licence to perform rigging basic level

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRTO015 Assemble and erect transmission structures

UETDRTO016 Install transmission structure hardware

Competency Field

Transmission Overhead

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	**Performance criteria describe the performance needed to demonstrate achievement of the element.**
1 Prepare to string the overhead transmission conductors	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Materials required for work are determined and obtained in accordance with work plan and workplace requirements
	1.4 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Hazards are identified, risks are assessed and control measures identified and applied
	1.6 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.7 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.8 Safe approach distances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.9 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.10 Work permits are signed in accordance with workplace requirements
	1.11 Worksite is prepared in accordance with the work plan and workplace requirements
	1.12 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Carry out stringing of	**2.1** Legislation, regulations, standards, codes of practice and

overhead transmission conductors		organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed in accordance with workplace requirements
	2.7	Stringing of overhead transmission conductors prior to terminating is performed in accordance with work plan, drawings and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete the work	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.5	Surplus materials are returned to storage or disposed of in accordance with workplace requirements
	3.6	Work permits are signed off in accordance with workplace requirements

3.7 Personnel are notified of work completion in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTO013 Pre-tension stringing overhead transmission conductors and cables.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTO017 String overhead transmission conductors

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 3.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
  - safe approach distances
- identifying hazards; assessing risks; and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- creating an equipotential work zone
- stringing conductors
- using at least five (5) of the following stringing equipment:
  - crimping equipment
  - conductor winches
  - lever hoist
  - conductor trailers/jinker
  - pre-formed splices
  - conductor drum stands
  - draw wire
  - rollers/sheaves
  - conductor grip
  - conductor stockings
  - swivels
- dealing with an unplanned event on at least one (1) occasion
- signing on and off relevant work permits in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of

the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards of:
  - induced voltages
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- construction manuals, system diagrams/plans and drawings
- role and responsibilities of a safety observer
- conductor types and characteristics
- construction clearances
- stringing methods.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, standards and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS028 Calibrate, verify and certify revenue metering/energy measurement instruments

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to calibrate verify and certify revenue metering/energy measurement instruments in the electricity supply industry (ESI).

It includes the evaluation and development of procedures and routines to certify the accuracy and traceability of revenue metering/energy measurement instruments.

It also includes the evaluation of test equipment capability. These processes must ensure compliance with metering industry regulations to ensure traceability of all measurements.

Note: Users who hold a Certificate III Electrotechnology electrician qualification or equivalent, meet the UEE prerequisite unit requirements.

They are still required to complete UETDREL005 Work safely in the vicinity of live electrical apparatus, to meet the requirements of working within the electricity supply industry (ESI).

The application of the skills and knowledge described in this unit requires a licence/registration to practice in the workplace subject to regulations for undertaking of electrical work.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to calibrate, verify and certify revenue metering/energy measurement instruments	**1.1** Workplace organisational requirements for the verification and certification of revenue metering/energy measurement instruments, are reviewed and determined
	1.2 Purpose of the calibration, verification and certification of revenue metering/energy measurement instruments is established
	1.3 Calibration, verification and certification procedures are established in accordance with workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Relevant stakeholders are identified and liaised with
	1.7 Work permits are determined in accordance with workplace requirements
	1.8 Hazards are identified, risks assessed, and control measures identified and applied
2 Calibrate, verify and certify revenue metering/energy measurement instruments	**2.1** Organisational workplace requirements for the work to be performed are applied and monitored

	2.2	Relevant stakeholder liaison and work permits are applied
	2.3	Lifting, and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.4	Hazard control measures are monitored in accordance with workplace requirements
	2.5	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.6	Revenue metering/energy measurement instruments are calibrated, verified and certified in accordance with workplace requirements
	2.7	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Revenue metering/energy measurement instruments are verified using results and certified for use
	3.2	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS027 Verification and certification of revenue metering/energy measurement instruments.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS028 Calibrate, verify and certify revenue metering/energy measurement instruments

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- establishing the purpose of the calibration, verification and certification of revenue metering/energy measurement instruments
- establishing calibration parameters
- developing and evaluating procedures and routines to verify and certify the accuracy and traceability of revenue metering/energy measurement instruments
- conducting a test of revenue metering/energy measurement instruments and evaluating test results
- evaluating and implementing procedures and practices to ensure traceability of test equipment to workplace requirements
- developing test procedures for new hardware and analysing performance against required outcomes
- evaluating test equipment capability.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards

- types and application of PPE
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- purpose of the calibration, verification and certification of revenue metering/energy measurement instruments
- procedures for the calibration, verification and certification of revenue metering/energy measurement instruments
- equipment traceability and registration
- electrical field testing and measurement including:
  - measurement concepts, including notion of error, accuracy, resolution, sources of measurement error and uncertainties, instrument specifications and calibration certificates, test and measuring instrument safety certification levels and their application
  - types of field measuring instruments and their application
  - measuring low voltage (LV) in direct current (d.c.) and alternating current (a.c.)
  - measuring high voltage (HV)
  - measuring power, energy, reactive power, power factor and maximum demand
  - measuring power quality, including waveform distortion, harmonics, power factor, and transients
- calibration techniques including:
  - principles of common calibration techniques
  - purpose of standards and calibration certification
  - minimising error during calibration
  - determining calibration parameters
  - need for normal performance check.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, facilities, equipment and PPE currently used in industry

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS029 Commission and maintain communication equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit covers the skills and knowledge required to commission and maintain power system communication equipment in the electricity supply industry (ESI).

It includes the isolation and functional checks of communication equipment associated with power systems, but does not include wiring.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to commission and maintain communication equipment	**1.1** Workplace organisational requirements for the commissioning and maintenance of communication equipment, are reviewed and determined
	1.2 Purpose of the commissioning and maintenance of communication equipment is established
	1.3 Testing procedures are discussed and reviewed with appropriate personnel
	1.4 Testing parameters are established from workplace organisational requirements
	1.5 Relevant stakeholders are identified and liaised with
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Hazards are identified, risks assessed, and control measures identified
	1.8 Work permits are organised in accordance with workplace requirements
	1.9 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
2 Commission and maintain communication equipment	**2.1** Relevant stakeholder liaison and work permits are applied
	2.2 Manual handling and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are applied and monitored in accordance with workplace requirements

	2.4 Communication equipment is commissioned and maintained in accordance with workplace requirements
	2.5 Communication equipment is tested in accordance with workplace requirements
	2.6 Solutions to non-routine problems are identified and actioned
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against the workplace requirements
	3.2 Relevant stakeholders are notified of completion and reports and/or completion documents are finalised
	3.3 Commissioning and maintenance documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS011 Install and maintain power system communication equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS029 Commission and maintain communication equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- commissioning and maintaining power systems communications equipment, including isolation and functional checks on at least three (3) of the following systems:
  - supervisory cables
  - power line carrier systems
  - protection signalling equipment
  - telephone systems
  - radio systems
  - voice frequency (VF) systems
  - multiplexing and fibre optics.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- systematic fault isolation
- communication equipment including:
  - types, characteristics and functions
  - commissioning and maintenance procedures
  - interface to power system equipment
  - hardware configurations
  - testing of communication links.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS030 Commission and maintain complex energy/revenue metering schemes

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to commission and maintain complex energy/revenue metering schemes in the electricity supply industry (ESI).

It includes different metering scheme types, including wholesale metering, voltage changeover schemes, summation, multiple feeder high voltage (HV) and low voltage (LV) customers, and generation.

It also includes calculations of complex metering installations overall errors, calculation and verification of transformer losses, and transmission line losses, and correction factors in meter programming.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS031 Commission and maintain energy/revenue metering schemes

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to commission and maintain complex energy/revenue metering schemes	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Purpose for commissioning and maintenance is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
	1.3 Work plan is determined and communicated with relevant personnel in accordance with workplace requirements
	1.4 Commissioning and maintenance procedures are established in accordance with workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work roles and tasks are allocated according to individual competencies and workplace requirements
	1.7 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.8 Liaison and communication issues with others/authorised personnel, authorities, clients and customers are resolved and activities coordinated to carry out work
	1.9 Work permits are determined in accordance with

		workplace requirements
	1.10	Hazards are identified, risks assessed, and control measures identified and applied
2 Commission and maintain complex energy/revenue metering schemes	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.5	Complex energy/revenue metering schemes are commissioned and maintained in accordance with workplace requirements
	2.6	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS003 Commission energy/revenue metering schemes (complex).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS030 Commission and maintain complex energy/revenue metering schemes

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- establishing the purpose of the commissioning or maintenance scheme
- establishing commissioning and maintenance procedures
- performing, on at least one (1) occasion, the following activities:
  - identification of faults with metering equipment
  - identification of faults with energy registration and revenue billing
- performing, on at least three (3) occasions, the commissioning or maintaining of at least seven (7) of the following complex metering scheme types:
  - multiple feeder high voltage (HV) and low voltage (LV) customers
  - summation
  - subtraction
  - interposing
  - voltage changeover schemes
  - generation
  - bulk supply
  - interconnector
  - wholesale metering
- demonstrating all of the following activities:
  - analysing data for best outcome
  - verifying installation
- performing, on at least two (2) occasions, at least six (6) of the following activities:
  - isolation

  - inspection
  - monitoring
  - testing
  - adjustment
  - calibration
  - functional checks
- performing, on at least three (3) occasions, all of the following activities:
  - verifying meter function
  - determining energy flows, voltage, current and phasor relationships
  - validating actual meter energy data
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- instrument transformers, including types, application and characteristics
- data analysis for best outcomes
- installation, and meter function and actual meter energy data
- energy flows, voltage, current and phasor relationships
- commissioning and maintaining metering scheme types and auxiliary systems, including:
  - wholesale metering
  - voltage changeover schemes
  - summation
  - multiple feeder HV and LV customers
  - generation
- principles of the following commissioning metering scheme types:
  - subtraction
  - interposing
  - bulk supply
  - interconnector

- procedures to perform all of the following activities in relation to metering equipment:
  - isolation
  - inspection
  - monitoring
  - testing
  - adjustment
  - repair
  - calibration
  - functional checks
- calculations of complex metering installations overall errors
- calculation and verification of transformer losses, transmission line losses, and correction factors in meter programming
- inputs and relationships of metering points to verify logical metering schemes
- metering instrument transformer burdens
- communication with market participants.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, facilities, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS031 Commission and maintain energy/revenue metering schemes

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to commission and maintain energy/revenue metering schemes in the electricity supply industry (ESI).

It includes types, application and characteristics of instrument transformers, procedures to analyse data for best outcomes, procedures to verify correct installation and meter function, and actual meter energy data verification.

It also includes procedures to perform activities in relation to metering equipment, including isolation, inspection, monitoring, testing, adjustment, calibration, and functional checks.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to commission and maintain energy/revenue metering schemes	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Purpose for commissioning and maintenance is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
	1.3 Work plan is determined and communicated with relevant personnel in accordance with workplace requirements
	1.4 Commissioning and maintenance procedures are established in accordance with workplace requirements
	1.5 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work roles and tasks are allocated according to individual competencies and workplace requirements
	1.7 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.8 Liaison and communication issues with others/authorised personnel, authorities, clients and customers are resolved and activities coordinated to carry out work
	1.9 Work permits are determined in accordance with

		workplace requirements
	1.10	Hazards are identified, risks assessed, and control measures identified and applied
2 Commission and maintain energy/revenue metering schemes	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.5	Energy/revenue metering schemes are commissioned and maintained in accordance with workplace requirements
	2.6	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS002 Commission energy/revenue metering schemes.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS031 Commission and maintain energy/revenue metering schemes

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing relevant work permits in accordance with workplace requirements
- establish the purpose of the commissioning or maintenance scheme
- establish commissioning and maintenance procedures
- performing, on at least three (3) occasions, the following activities:
  - identification of faults with metering equipment
  - identification of faults with energy registration and revenue billing
- demonstrating all of the following activities:
  - analysing data for best outcome
  - verifying installation
- performing, on at least two (2) occasions, at least six (6) of the following activities:
  - isolation
  - inspection
  - monitoring
  - testing
  - adjustment
  - calibration
  - functional checks
- performing, on at least three (3) occasions, all the following activities:
  - verifying meter function
  - determining energy flows, voltage, current and phasor relationships

    - validating actual meter energy data
- performing on at least three (3) occasions, the commissioning or maintaining of the following metering scheme types:
    - single feeder high voltage (HV)
    - low voltage (LV) current transformer customer sites
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- instrument transformers, including types, application and characteristics
- inputs and relationships of metering points to verify logical metering schemes
- instrument transformer burden metering
- communication with market participants
- data analysis for best outcomes
- installation, and meter function and actual meter energy data
- energy flows, voltage, current and phasor relationships
- procedures for the following activities in relation to metering equipment:
    - isolation
    - inspection
    - monitoring
    - testing
    - adjustment
    - repair
    - calibration
    - functional checks.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS032 Commission and maintain metering schemes

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit covers the skills and knowledge required to commission and maintain power systems metering schemes in the electricity supply industry (ESI).

It includes commissioning and maintenance procedures, safety and polarity testing, and accuracy measurements.

It also includes types of meters, control systems and associated equipment and accessories.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to commission and maintain metering schemes	**1.1** Workplace organisational requirements for the commissioning and maintenance of metering schemes, are reviewed and determined
	1.2 Purpose of the commissioning and maintenance of metering schemes is established
	1.3 Testing procedures are discussed and reviewed with appropriate personnel
	1.4 Testing parameters are established from workplace organisational requirements
	1.5 Relevant stakeholders are identified and liaised with
	1.6 Hazards are identified, risks assessed, and control measures identified
	1.7 Work permits are organised in accordance with workplace requirements
	1.8 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
2 Commission and maintain metering schemes	**2.1** Relevant stakeholder liaison and work permits are applied
	2.2 Manual handling and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are applied and monitored in accordance with workplace requirements
	2.4 Metering schemes are commissioned and maintained in accordance with workplace requirements

	2.5 Metering schemes are tested in accordance with workplace requirements
	2.6 Solutions to non-routine problems are identified and actioned
	2.7 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against workplace requirements
	3.2 Relevant stakeholders are notified of completion and reports and/or completion documents are finalised
	3.3 Commissioning and maintenance documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS005 Commission power systems metering schemes.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS032 Commission and maintain metering schemes

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- interpreting and using drawings, diagrams and instructions
- commissioning, maintaining and testing metering schemes, including accuracy measurements on three (3) types of metering systems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- metering schemes including:
  - commissioning and maintenance procedures
  - testing including accuracy measurements
- metering and control equipment including:
  - types of meters
  - control systems, including voltage regulation and capacitor bank control
  - types of associated equipment and accessories
  - testing procedures, including safety and polarity testing
  - commissioning procedures associated with relevant equipment.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS033 Commission and maintain network protection and control systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to commission and maintain network protection and control systems in the electricity supply industry (ESI).

It includes isolating and restoring, monitoring, repairing, setting, testing and functional checks of all types of network protection and control systems.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to commission and maintain network protection and control systems	**1.1** Workplace organisational requirements for the commissioning and maintenance of network protection and control systems, are reviewed and determined
	1.2 Purpose of the commissioning and maintenance of network protection and control systems is established
	1.3 Testing procedures are discussed and reviewed with appropriate personnel
	1.4 Testing parameters are established from workplace organisational requirements
	1.5 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.7 Relevant stakeholders are identified and liaised with
	1.8 Hazards are identified, risks assessed, and control measures identified
	1.9 Work permits are organised in accordance with workplace requirements
2 Commission and maintain network protection and control systems	**2.1** Relevant stakeholder liaison and work permits are applied
	2.2 Manual handling and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are applied and monitored in

		accordance with workplace requirements
	2.4	Network protection and control systems are commissioned and maintained in accordance with workplace requirements
	2.5	Network protection and control systems are tested in accordance with workplace requirements
	2.6	Solutions to non-routine problems are identified and actioned
	2.7	Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against workplace requirements
	3.2	Relevant stakeholders are notified of completion and reports and/or completion documents are finalised
	3.3	Commissioning and maintenance documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS017 Maintain interdependent network protection and control systems.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS033 Commission and maintain network protection and control systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- determining the preparation required for the commissioning and maintaining network protection and control systems including:
  - workplace organisational requirements
  - testing procedures and parameters
  - tools, equipment, personal protective equipment (PPE) and work permits
  - stakeholder liaison
- inspecting and using relevant tools, equipment and PPE
- establishing the purpose of the commissioning and maintenance of network protection and control systems
- commissioning four (4) types of network protection and control systems
- maintaining network protection and control systems, including:
  - isolating protection, control and alarms associated with protection and control schemes
  - carrying out function tests (trips and alarms) on protection and control schemes
  - recording performance of protection and control schemes
  - isolating in-service current transformers
- completed commissioning and maintenance documentation is made available in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- electrical equipment associated with protection and control schemes, including:
  - types and applications
  - characteristics and capabilities

- maintenance and commissioning system diagrams, drawings and operating manuals
- testing techniques and procedures
- types and applications of test equipment
- operation, maintenance and commissioning procedures for protection devices and high voltage (HV) plant
- relay manufacturer specifications, types, function and characteristics
- operation, maintenance and commissioning procedures associated with other protection and control systems including:
  - gas collection
  - oil collection
  - sulphur hexafluoride (SF6) collection
  - surge relay
- measurements, interpretation and analysis of protection and control schemes for HV plant and equipment
- operation, maintenance and commissioning procedures associated with voltage regulation schemes
- electrical equipment associated with distribution field device protection and control schemes
- circuit breaker auxiliary systems
- detailed operation and setting of protection and control schemes
- location and rectification of faults in low voltage (LV) electrical equipment
- effects of harmonics.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS034 Commission and maintain voltage regulating equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to commission and maintain voltage regulating equipment in the electricity supply industry (ESI).

It includes isolating and restoring, monitoring, repairing, setting, testing and functional checks of all types of voltage regulating equipment.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to commission and maintain voltage regulating equipment	**1.1** Workplace organisational requirements for the commissioning and maintaining of voltage regulating equipment are reviewed and determined
	1.2 Purpose of the commissioning and maintaining of voltage regulating equipment is established
	1.3 Testing procedures are discussed and reviewed with appropriate personnel
	1.4 Testing parameters are established from workplace organisational requirements
	1.5 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.7 Relevant stakeholders are identified and liaised with
	1.8 Hazards are identified, risks assessed, and control measures identified
	1.9 Work permits are organised in accordance with workplace requirements
2 Commission and maintain voltage regulating equipment	**2.1** Relevant stakeholder liaison and work permits are applied
	2.2 Manual handling and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are applied and monitored in accordance with workplace requirements

	2.4 Voltage regulating equipment is commissioned and maintained in accordance with workplace requirements
	2.5 Solutions to non-routine problems are identified and actioned
	2.6 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against workplace requirements
	3.2 Relevant stakeholders are notified of completion and reports and/or completion documents are finalised
	3.3 Evidence of testing documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS018 Maintain, test and commission power systems voltage regulating equipment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS034 Commission and maintain voltage regulating equipment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- determining the preparation required for the commissioning and maintenance of voltage regulating equipment, including:
  - workplace organisational requirements
  - testing procedures and parameters
  - tools, equipment, personal protective equipment (PPE) and work permits
  - stakeholder liaison
- inspecting and using relevant tools, equipment and PPE
- establishing the purpose of the commissioning and maintenance of voltage regulating equipment
- testing and commissioning on two (2) occasions all of the following equipment:
  - voltage regulator
  - reactance control
  - master slave control.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- voltage regulating equipment, including:
  - types and applications
  - characteristics and capabilities
  - diagrams and operation manuals
- testing techniques and procedures
- types and applications of test equipment
- operation, maintenance and commissioning procedures for voltage regulating equipment

- principles of:
  - voltage regulator on-load tap changers (OLTC)
  - synchronous condensers
  - voltage control techniques and devices.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS035 Conduct evaluation of network protection and control system faults

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to conduct evaluation of network protection and control system faults in the electricity supply industry (ESI).

It includes interpretation of targets, flags and indicators, the interpretation of fault reports using downloaded event data, and development of conclusions and recommendations.

It also includes measurements, interpretation and analysis of protection and control schemes, the detailed operation and setting of protection and control schemes, and location and rectification of faults.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to conduct evaluation of network protection and control system faults	**1.1** Workplace organisational requirements for the evaluation of network protection and control system faults are reviewed and determined
	1.2 Purpose of the evaluation of network protection and control system faults is established
	1.3 Testing procedures are discussed and reviewed with appropriate personnel
	1.4 Testing parameters are established from workplace organisational requirements
	1.5 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.7 Relevant stakeholders are identified and liaised with
	1.8 Hazards are identified, risks assessed, and control measures identified
	1.9 Work permits are organised in accordance with workplace requirements
2 Conduct evaluation of network protection and control system faults	**2.1** Relevant stakeholder liaison and work permits are applied

	2.2	Manual handling and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3	Hazard control measures are applied and monitored in accordance with workplace requirements
	2.4	Network protection and control system faults are evaluated in accordance with workplace requirements
	2.5	Network protection and control system faults are tested in accordance with workplace requirements
	2.6	Solutions to non-routine problems are identified and actioned
	2.7	Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against workplace requirements
	3.2	Relevant stakeholders are notified of completion and reports and/or completion documents are finalised
	3.3	Faults and evaluation findings are documented in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS006 Conduct evaluation of power system substation faults.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS035 Conduct evaluation of network protection and control system faults

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- determining the preparation required for the evaluation of network protection and control system faults including:
  - workplace organisational requirements
  - testing procedures and parameters
  - tools, equipment, personal protective equipment (PPE) and work permits
  - stakeholder liaison
- inspecting and using relevant tools, equipment and PPE
- demonstrating at least two (2) downloads from protection and control, or recording equipment
- developing five (5) evaluation reports on power system events, including all of the following:
  - interpretation of targets, flags and indicators
  - interpretation of fault reports using downloaded event data
  - development of conclusions and recommendations
- documenting faults and evaluating findings in accordance with workplace requirements.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- electrical equipment associated with protection and control schemes including:
  - types and applications
  - characteristics and capabilities
  - diagrams and operating manuals
- testing techniques and procedures
- types and applications of test equipment

- operation procedures for protection and control devices
- relay manufacturer specifications, types, functions and characteristics
- measurements, interpretation and analysis of protection and control schemes
- detailed operation and setting of protection and control schemes
- location and rectification of faults
- fundamentals of high voltage (HV) plant and associated apparatus.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to develop secondary protection and control scheme isolation documents for the electricity supply industry (ESI).

This includes the preparation to develop secondary isolation and restoration documents and a thorough understanding of secondary protection and control schemes.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to develop secondary protection and control scheme isolation and restoration instructional documents	**1.1** Workplace organisational requirements for the development of secondary isolation instructional documents, are obtained and reviewed
	1.2 Purpose of the development of secondary isolation and restoration instructional documents is established
	1.3 Testing procedures are discussed and reviewed with appropriate personnel
	1.4 Tools, equipment, personal protective equipment (PPE) and work permits required for secondary isolation instructional documents are determined
	1.5 Relevant stakeholders are identified and liaised with
2 Develop secondary protection and control scheme isolation and restoration instructional documents	**2.1** Work tasks and sequence of isolation and restoration is determined
	2.2 Hazards are identified, risks assessed, and control measures identified and applied
	2.3 Secondary isolation and restoration instructional documents are developed in accordance with workplace requirements
	2.4 Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1** Completed work is checked for compliance against the workplace requirements
	3.2 Secondary isolation and restoration instructional documents are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS010 Develop power systems secondary isolation instructional documents.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- determining the preparation required for the secondary isolation and restoration instructional documents including:
  - applicable workplace organisational procedures
  - testing procedures
  - tools, equipment, personal protective equipment (PPE) and work permits
  - relevant stakeholders
- establishing the purpose of the secondary isolation and restoration instructional documents
- developing secondary isolation and restoration instructional documents for at least two (2) of the following substation equipment:
  - bus protection
  - feeder/line protection
  - transformer protection
  - earth fault protection
  - backup protection
  - pilot wire/differential protection
- applying the following when developing secondary isolation and restoration instructional documents:
  - work tasks and sequence of isolation and restoration
  - hazard assessment and control measures
  - consideration of network stability
- notifying appropriate personnel of the completed secondary isolation and restoration instructional documents.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of

the requirements of the elements and performance criteria and include knowledge of:

- permit types and application for secondary equipment
- system diagrams/plans and drawings, manufacturer manuals
- electrical equipment fundamentals including:
  - safety precautions with regard to using electrical equipment
  - techniques in pre-use inspection on the serviceability of electrical equipment
  - techniques in the general maintenance, care and storage of electrical equipment
  - identifying hazards, assessing and controlling risks associated with the use of electrical equipment
- processes for developing secondary isolation and restoration instructional documents including:
  - secondary isolation and restoration principles
  - correct sequence of isolation and restoration
  - stakeholder engagement
  - adequate protection remains in service to provide plant protection
  - instruction preparation
  - network stability
  - remote control systems
- protection schemes including:
  - codes, supply authority regulations and organisational requirements
  - types of protection schemes, reasons for use, application of protection zones around system elements and degree of protection.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements, supply authority regulations, codes and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS037 Maintain and calibrate protection relays and meters

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to maintain and calibrate protection relays and meters in the electricity supply industry (ESI).

It includes the repair, calibration and testing of various types of protection relays, including electromechanical, analogue, digital electronic and numerical devices.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace subject to regulations for undertaking of electrical work.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain and calibrate protection relays and meters	**1.1** Workplace organisational requirements for the maintenance and calibration of relays and meters, are reviewed and determined
	1.2 Purpose of the maintenance and calibration of relays and meters is established
	1.3 Testing procedures are discussed and reviewed with appropriate personnel
	1.4 Testing parameters are established from workplace organisational requirements
	1.5 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.7 Relevant stakeholders are identified and liaised with
	1.8 Hazards are identified, risks assessed, and control measures identified
	1.9 Work permits are organised in accordance with workplace requirements
2 Maintain and calibrate protection relays and meters	**2.1** Relevant stakeholder liaison and work permits are applied
	2.2 Manual handling and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are applied and monitored in accordance with workplace requirements

	2.4	Protection relays and meters are maintained, tested and calibrated in accordance with workplace requirements
	2.5	Solutions to non-routine problems are identified and actioned
	2.6	Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against workplace requirements
	3.2	Relevant stakeholders are notified of completion and reports and/or completion documents are finalised
	3.3	Commissioning and maintenance documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS023 Repair, test and calibrate protection relays and meters.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS037 Maintain and calibrate protection relays and meters

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- determining the preparation required for the maintenance and calibration of protection relays and meters
- maintaining and calibrating four (4) of the following protection devices:
  - overcurrent
  - voltage regulating
  - current differential
  - impedance
  - feeder protection
  - phase comparison.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- testing equipment, techniques and procedures
- electrical equipment associated with protection relays and meters, including:
  - types and applications
  - characteristics, capabilities and operating procedures
  - diagrams and operating manuals
  - maintenance and calibration.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS038 Perform accuracy checks on instrument transformers

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to perform accuracy checks on instrument transformers in the electricity supply industry (ESI).

It includes performing accuracy checks on instrument transformers and proving their functionality.

It also includes instrument transformer types, application, characteristics, capabilities and operating procedures.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0010 Compile and produce an energy sector detailed report

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRTS036 Develop secondary protection and control scheme isolation and restoration documents

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform accuracy checks on instrument transformers	**1.1** Workplace organisational requirements for performing accuracy checks on instrument transformers are reviewed and determined
	1.2 Purpose for performing accuracy checks on instrument transformers is established
	1.3 Testing procedures are discussed and reviewed with appropriate personnel
	1.4 Testing parameters are established from workplace organisational requirements
	1.5 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.6 Work is prioritised and sequenced for completion in accordance with workplace requirements
	1.7 Relevant stakeholders are identified and liaised with
2 Perform accuracy checks on instrument transformers	**2.1** Relevant stakeholder liaison and work permits are applied
	2.2 Manual handling and use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are applied and monitored in accordance with workplace requirements
	2.4 Accuracy checks on instrument transformers are performed in accordance with workplace requirements

	2.5	Instrument transformers are tested in accordance with workplace requirements
	2.6	Quality checks of work are undertaken in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against workplace requirements
	3.2	Relevant stakeholders are notified of completion and reports and/or completion documents are finalised
	3.3	Commissioning and maintenance documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS021 Perform accuracy checks on power systems instrument transformers.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS038 Perform accuracy checks on instrument transformers

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- determining the preparation required for accuracy checks on instrument transformers in accordance with workplace organisational requirements
- inspecting and using relevant tools, equipment and personal protective equipment (PPE)
- establishing the purpose of accuracy checks on instrument transformers
- performing five (5) accuracy checks on instrument transformers, including all of the following:
  - isolation
  - inspection
  - polarity
  - measurement of excitation curves
  - phase and ratio errors.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- instrument transformers, including:
  - types and applications
  - characteristics, capabilities and operating procedures
  - diagrams and operating manuals
- testing techniques and procedures
- types and applications of test equipment.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRTS039 Perform current injection testing of secondary devices

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to perform current injection testing of secondary devices in the electricity supply industry (ESI).

It includes the testing of secondary devices using current injection testing to determine correct function of secondary circuits, while ensuring testing is conducted in accordance with workplace requirements. It also includes the validation of secondary wiring circuits to determine the correct operation of the scheme.

The application of the skills and knowledge described in this unit requires a licence/registration to practice in the workplace subject to regulations for undertaking of electrical work.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to perform current injection testing of secondary devices	**1.1** Workplace organisational requirements for performing current injection testing of secondary devices, are reviewed and determined
	1.2 Purpose for performing current injection testing of secondary devices is established and tolerances identified
	1.3 Testing procedures are established in accordance with workplace requirements
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.5 Work roles and tasks are allocated according to requirements and individual competencies
	1.6 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.7 Relevant stakeholders are identified and liaised with
	1.8 Work permits are determined in accordance with workplace requirements
	1.9 Hazards are identified, risks assessed, and control measures identified and applied
2 Perform current injection testing of secondary devices	**2.1** Organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements

	2.4	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.5	Current injection testing of secondary devices is performed in accordance with workplace requirements
	2.6	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRTS022 Perform current injection testing using phantom load.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRTS039 Perform current injection testing of secondary devices

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- establishing the purpose of current injection testing of secondary devices
- establishing procedures for current injection testing of secondary devices
- testing of secondary devices using current injection test set
- validating of secondary wiring circuits to determine the correct operation of the scheme.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- purpose of current injection testing of secondary devices
- current injection testing of secondary devices
- types of secondary injection equipment
- current injection testing purposes

- principles of current transformer operation
- current transformer loading to apply the appropriate level of current required to verify the current transformer ratio, polarity and secondary wiring
- impacts of testing on equipment and data.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to apply work health and safety (WHS)/ occupational health and safety (OHS) requirements for powerline vegetation control in the electricity supply industry (ESI).

It includes identifying WHS/OHS legislation, regulations, standards, codes of practice and organisational workplace requirements and their application to relevant workplace tasks.

It also includes identifying hazards, controlling risks, responding to emergencies and completing relevant workplace documentation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

Not applicable.

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to apply WHS/OHS requirements	**1.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the worksite are identified and referred to
	1.2	Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in safe working order
	1.3	Hazards are identified, risks assessed and control measures identified in accordance with workplace requirements
	1.4	Worksite is prepared to minimise risk in accordance with workplace requirements
2 Apply WHS/OHS requirements	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Lifting is carried out in accordance with workplace requirements
	2.3	Plant, tools, equipment and PPE are used in accordance with manufacturer and workplace requirements
	2.4	Hazard control measures are applied and monitored in accordance with workplace requirements
	2.5	Incidents and emergencies are responded to in accordance with workplace requirements
	2.6	Worksite is maintained in accordance with workplace requirements
	2.7	Hazards identified during the work are controlled in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.2	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.3	WHS/OHS recommendations are made in accordance with workplace requirements
	3.4	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This is a new unit. No Equivalent Unit.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC001 Apply work health and safety requirements for powerline vegetation control

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - identifying typical hazards associated with powerline vegetation control work
  - applying and reviewing risk control measures to minimise, control or eliminate identified hazards
  - monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- applying workplace procedures for an emergency involving electricity
- using plant, tools and equipment safely
- applying correct manual handling techniques
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant WHS/OHS legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - duty of care
  - employer and employee responsibilities, rights and obligations
  - major functions of safety committees and representatives
  - powers of health and safety inspectors
  - WHS consultation (toolbox/safety meetings)
  - manual handling
  - working at heights
  - safe approach distances

    - drop zones
- hazard and risk assessment, including:
    - difference between hazards and risks
    - hierarchy of control
    - control measures and monitoring of control measures
    - hazards in the powerline vegetation control environment
    - physical and psychological hazards, including excessive noise, vibration, flying particles, heat, cold, ultraviolet (UV) radiation, chemicals, burns, dust, electrical currents, insects, snakes, fauna, fatigue, stress, drugs and alcohol
- types, inspection and application of PPE
- safe use of plant, tools and equipment, including:
    - pre-operational checks
    - post-operational checks
- types of fires and basic firefighting equipment
- types of injuries common in the powerline vegetation control environment
- incident, emergency and rescue procedures
- processes for communicating, reporting and recording incidents and emergencies
- hazardous substances and dangerous goods in the workplace, including:
    - classifications
    - labelling and storage requirements
    - purpose and interpretation of safety data sheets (SDS)
- working safely in a powerline vegetation control environment, including:
    - effects of electric shock on the body
    - consequences of short circuits, including arc flash and touch and step potentials
    - precautions to minimise the chance of electric shock
    - procedures for emergencies involving electricity
    - common causes of electrical accidents.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC002 Assess vegetation in an electricity supply industry environment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to assess vegetation in an electricity supply industry (ESI) environment.

It includes identification of vegetation, tree defects and hazards, encroaching vegetation, clearance zones, electrical network characteristics and environmental requirements.

It also includes recommending and documenting control measures.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

outcomes.	demonstrate achievement of the element.
1 Prepare to assess vegetation	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work instruction is obtained and confirmed in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed and control measures identified and applied
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in safe working order
	1.5 Liaison and communication with stakeholders is carried out in accordance with workplace requirements
	1.6 Work is prioritised and sequenced for completion in accordance with workplace requirements
2 Conduct assessment of vegetation and recommend control measures	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Tools, equipment and PPE are used in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Vegetation is assessed in accordance with workplace requirements
	2.5 Environmental requirements are identified in accordance with workplace requirements
	2.6 Vegetation control measures are recommended in accordance with workplace requirements
3 Complete work and documentation	**3.1** Work instructions are updated, and documentation completed in accordance with workplace requirements
	3.2 Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.3 Personnel are notified of work completion in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC24 Assess vegetation and recommend control measures in an ESI environment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC002 Assess vegetation in an electricity supply industry environment

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
- interpreting and using drawings, diagrams and instructions
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- identifying electrical apparatus, including but not limited to:
  - low voltage (LV)
  - high voltages (HV)
  - stay wires
- assessing vegetation clearances
- identifying tree species and characteristics, including regrowth
- assessing vegetation for defects and hazards, including
  - recommending control measures:
    - tools and equipment
    - safe approach distances for:
      - plant
      - persons and handheld tools
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:

  - WHS/OHS
  - vegetation clearances
  - safe approach distances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- tree species and characteristics, including regrowth
- tree defects and hazards
- methods for removal, pruning and cutting of vegetation
- characteristics of overhead and underground electricity networks, including:
  - transmission, distribution and rail
  - layout/configuration
  - components
  - voltage levels
  - network diagrams.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations and codes of practice.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC003 Control vegetation for powerline work

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required for powerline vegetation control work in the electricity supply industry (ESI).

It includes vegetation control work in the vicinity of live electrical apparatus by line workers using plant, tools and equipment in accordance with workplace requirements.

This unit is subject to the following requirements for entry:

Note: Those holding an existing Certificate III ESI qualification or equivalent meets the prerequisite unit requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirement which must be confirmed prior to commencing this unit.

Pre-requisite Unit

AHCMOM213 Operate and maintain chainsaws

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to control vegetation	**1.1** Legislation, regulations, standards, codes of practice and industry workplace requirements for the work to be performed are obtained and confirmed
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in safe working order
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.6 Work permits are received and signed in accordance with workplace requirements
	1.7 Safety observer role and responsibilities are discussed and confirmed in accordance with workplace requirements
	1.8 Communication method between the workers and safety observer is determined and confirmed in accordance with workplace requirements
	1.9 Safe approach distances and vegetation clearances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.10 Worksite is prepared in accordance with the work plan and workplace requirements
	1.11 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Control vegetation	**2.1** Legislation, regulations, standards, codes of practice and industry workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of plant, tools

		and equipment are carried out in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Vegetation control is performed in accordance with work plan and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
	2.9	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Work permits are signed off in accordance with workplace requirements
	3.3	Incidents or unplanned events are reported in accordance with workplace requirements
	3.4	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.5	Plant, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC29 Control vegetation whilst performing linework.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC003 Control vegetation for powerline work

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
  - vegetation clearances
- identifying hazards and assessing risks
- identifying, applying and monitoring control measures
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- confirming safety observer is in position in accordance with workplace requirements
- communicating with the safety observer during the vegetation control work, including:
  - verbal
  - non-verbal
- pruning vegetation in accordance with workplace requirements, including:
  - using techniques for shaping, forming and controlling/managing epicormic regrowth
  - using appropriate cutting techniques for branch removal
  - providing clearance for electrical apparatus
  - applying the principles of compartmentalization of decay in trees (CODIT)
  - determining the correct location for the final cut
  - using species-appropriate pruning techniques
- using specialised tools and equipment safely
- performing pre-operational checks on specialised tools and equipment
- undertaking vegetation control measures using the following:
  - hand clearing
  - specialised tools and equipment
- dealing with an unplanned event on at least one (1) occasion

- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - vegetation clearances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- vegetation control principles and techniques
- pruning principles and techniques, including:
  - shaping, forming and controlling epicormic regrowth
  - preventing disease and damage (CODIT)
  - promoting tree health
  - providing clearance for electrical apparatus
  - effects of incorrect pruning
- tree physiology (basic), including:
  - photosynthesis
  - transpiration
  - respiration
  - plant development and growth
- biosecurity practices for pruning, including:
  - sterilisation of clothing, tools and equipment
  - management of debris removal
- specialised pruning tools and equipment, including:
  - inspection
  - care and maintenance
  - storage and transport
- pruning techniques, including:

- feathering
- formative
- preventative
- natural target pruning
- sequence (cutting techniques) for branch removal.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry for controlling vegetation for powerline work
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC004 Control vegetation in the vicinity of live electrical apparatus from an elevated work platform

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to control vegetation in the vicinity of live electrical apparatus from an elevated work platform (EWP) in the electricity supply industry (ESI).

It includes the safe operation of an EWP, vegetation clearance zones, safe approach distances and specialised tools and equipment to cut and prune vegetation in accordance with workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

UETDRVC007 Control vegetation using pruning techniques

UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to control vegetation from an EWP	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work instruction is obtained and confirmed in accordance with workplace requirements
	1.3 Work permits are organised in accordance with workplace requirements
	1.4 Hazards are identified, risks assessed and control measures identified and applied
	1.5 EWP, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in safe working order
	1.6 Worksite is prepared in accordance with the work instruction and workplace requirements
	1.7 Routine pre-operational checks are completed to manufacturer specifications and workplace requirements
	1.8 Safety observer role, responsibility and communication method is discussed and confirmed in accordance with workplace requirements
	1.9 Safe approach distances and vegetation clearances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.10 Traffic management plan is confirmed as being in place in accordance with workplace requirements
2 Perform vegetation control from an EWP	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of EWP, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance

		with workplace requirements
	2.4	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Vegetation control work from an EWP is performed in accordance with the work instruction and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work instruction and workplace requirements
	3.2	EWP, tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.3	Incidents or unplanned events are reported in accordance with workplace requirements
	3.4	Work permits are signed off, where appropriate, in accordance with workplace requirements
	3.5	Worksite is cleaned and made safe in accordance with workplace requirements
	3.6	Work documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC25 Use elevated platform to cut vegetation above ground level near live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC004 Control vegetation in the vicinity of live electrical apparatus from an elevated work platform

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
  - safe approach distances
  - vegetation clearances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- organising and signing on and off relevant work permits in accordance with workplace requirements
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- performing pre-operational checks on elevated work platform (EWP), tools and equipment
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- using tools and equipment to safely control vegetation from an EWP, including:
  - techniques for shaping, forming, and controlling/managing epicormic regrowth
  - appropriate cutting technique for branch removal
  - providing clearance for electrical apparatus
- using an EWP whilst maintaining safe approach distance in the vicinity of live electrical apparatus
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace

requirements, including:

- WHS/OHS
- safe approach distances
- vegetation clearances

- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- application, purpose and types of work permits
- safety observer:
  - role and responsibilities
  - communication methods
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- vegetation control principles and techniques
- EWP operation, including:
  - types of, selection and safe use
  - insulation properties and testing
  - inspection, care and maintenance
  - emergency procedures
- vegetation control tools and equipment, including:
  - types of, selection and safe use
  - insulated tools and testing
  - inspection, care and maintenance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC005 Control vegetation in the vicinity of live electrical apparatus from ground level

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to control vegetation in the vicinity of live electrical apparatus from ground level in the electricity supply industry (ESI).

It includes vegetation clearance zones, safe approach distances, the safe use of specialised tools and equipment to cut and prune vegetation in accordance with workplace requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

outcomes.	demonstrate achievement of the element.
1 Prepare to control vegetation from ground level	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work instruction is obtained and confirmed in accordance with workplace requirements
	1.3 Hazards are identified, risks assessed and control measures identified and applied
	1.4 Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in safe working order
	1.5 Worksite is prepared in accordance with the work instruction and workplace requirements
	1.6 Routine pre-operational checks are completed to manufacturer specifications and workplace requirements
	1.7 Work permits are organised in accordance with workplace requirements
	1.8 Safety observer role, responsibility and communication method is discussed and confirmed in accordance with workplace requirements
	1.9 Safe approach distances and vegetation clearances for the work to be performed are determined and confirmed in accordance with workplace requirements
2 Perform vegetation control from ground level	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Hazard control measures are monitored in accordance with workplace requirements
	2.3 Tools, equipment and PPE are used in accordance with workplace requirements
	2.4 Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.5 Safe approach distances are maintained when the work is being performed

	2.6	Safety observer is positioned to observe the work in accordance with workplace requirements
	2.7	Vegetation control work is performed in accordance with the work instruction and workplace requirements
	2.8	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work instruction and workplace requirements
	3.2	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.3	Worksite is cleaned and made safe in accordance with workplace requirements
	3.4	Work permits are signed off, where appropriate, in accordance with workplace requirements
	3.5	Incidents or unplanned events are reported in accordance with workplace requirements
	3.6	Work documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC26 Cut vegetation at ground level near live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC005 Control vegetation in the vicinity of live electrical apparatus from ground level

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
  - vegetation clearances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- organising and signing on and off relevant work permits in accordance with workplace requirements
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- performing pre-operational checks on tools and equipment
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- using tools and equipment to safely control vegetation
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - vegetation clearances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE

- application, purpose and types of work permits
- safety observer:
  - role and responsibilities
  - communication methods
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- vegetation control principles and techniques
- vegetation control tools and equipment, including:
  - types of, selection and safe use
  - insulated tools and testing
  - inspection, care and maintenance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC006 Control vegetation in the vicinity of live electrical apparatus from within the tree

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to control vegetation in the vicinity of live electrical apparatus from within the tree in the electricity supply industry (ESI).

It includes cutting and pruning, vegetation clearance zones, safe approach distances, specialised climbing tools, equipment, personal protective equipment (PPE) and climbing techniques.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

UETDRVC007 Control vegetation using pruning techniques

UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to control vegetation from within the tree	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work permits are organised in accordance with workplace requirements
	1.3 Work instruction is obtained and confirmed in accordance with workplace requirements
	1.4 Hazards are identified, risks assessed and control measures are identified and applied
	1.5 Tools, equipment and PPE required for work are determined, obtained and confirmed in safe working order
	1.6 Routine pre-operational checks are completed to manufacturer specifications and workplace requirements
	1.7 Worksite is prepared in accordance with the work instruction and workplace requirements
	1.8 Safety observer role, responsibility and communication method are discussed and confirmed in accordance with workplace requirements
	1.9 Safe approach distances and vegetation clearances for the work to be performed are determined and confirmed in accordance with workplace requirements
2 Perform vegetation control from within the tree	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Lifting, working at heights and the use of tools, equipment and PPE are carried out in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Safety observer is positioned to observe the work in accordance with workplace requirements
	2.5 Communication methods between workers and safety observer are used in accordance with workplace

		requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Safe climbing techniques are applied in accordance with workplace requirements
	2.8	Vegetation control work is performed in accordance with the work instruction and workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work instruction and workplace requirements
	3.2	Work permits are signed off, where appropriate, in accordance with workplace requirements
	3.3	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.4	Worksite is cleaned and made safe in accordance with workplace requirements
	3.5	Incidents or unplanned events are reported in accordance with workplace requirements
	3.6	Work documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC21 Use climbing techniques to cut vegetation above ground near live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC006 Control vegetation in the vicinity of live electrical apparatus from within the tree

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
  - vegetation clearances
- identifying hazards and assessing risks
- identifying, applying and monitoring control measures
- organising and signing on and off relevant work permits in accordance with workplace requirements
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- performing pre-operational checks on tools and equipment
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- using safe climbing techniques
- using tools and equipment to safely control vegetation, including:
  - techniques for shaping, forming and controlling/managing epicormic regrowth
  - appropriate cutting technique for branch removal
  - providing clearance for electrical apparatus
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:

  - WHS/OHS
  - safe approach distances
  - vegetation clearances
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- application, purpose and types of work permits
- safety observer:
  - role and responsibilities
  - communication methods
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- climbing equipment, including:
  - types and application
  - inspection, care and maintenance
- safe climbing techniques
- vegetation control tools and equipment, including:
  - types of, selection and use
  - insulated tools and testing
  - inspection, care and maintenance.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC007 Control vegetation using pruning techniques

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to control vegetation using pruning techniques in the electricity supply industry (ESI).

It includes pruning activities performed in accordance with relevant industry standards to achieve statutory vegetation clearance requirements.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for pruning	**1.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2	Work instruction is obtained and confirmed in accordance with workplace requirements
	1.3	Tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in safe working order
	1.4	Hazards are identified, risks assessed, and control measures identified and applied
	1.5	Work is prioritised and sequenced for completion in accordance with work instruction and workplace requirements
	1.6	Worksite is prepared in accordance with the work instruction and workplace requirements
2 Perform pruning	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	PPE is used in accordance with workplace requirements
	2.3	Hazard control measures are monitored in accordance with workplace requirements
	2.4	Pruning techniques are applied in accordance with work instructions and workplace requirements
	2.5	Pruning tools and equipment are operated safely and effectively in accordance with the manufacturer instructions and workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work instruction and workplace requirements
	3.2	Tools and equipment are cleaned, checked and returned to storage in accordance with workplace requirements
	3.3	Incidents or unplanned events are reported in accordance with workplace requirements

3.4 Worksite is cleaned and made safe in accordance with workplace requirements

3.5 Work documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC33 Apply pruning techniques to vegetation control near live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC007 Control vegetation using pruning techniques

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- identifying hazards and assessing risks
- identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- pruning vegetation in accordance with workplace requirements, including:
  - using techniques for shaping and forming vegetation
  - controlling/managing epicormic regrowth
  - using appropriate cutting techniques for branch removal
  - applying the principles of compartmentalization of decay in trees (CODIT)
  - determining the correct location for the final cut
  - using species appropriate pruning techniques
- using tools and equipment safely
- performing pre-operational checks on tools and equipment
- using correct cutting angle in accordance with workplace requirements, including:
  - branch bark ridge
  - stem bark ridge
  - visible branch collar
  - determining suitable growth points
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice industry and workplace requirements, including:
  - WHS/OHS
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- pruning principles and techniques, including:
  - shaping, forming and controlling epicormic regrowth
  - preventing disease and damage (CODIT)
  - promoting tree health
  - effects of incorrect pruning
- tree physiology (basic), including:
  - photosynthesis
  - transpiration
  - respiration
  - plant development and growth (including epicormic growth)
- biosecurity practices for pruning, including:
  - sterilisation of clothing, tools and equipment
  - management of debris removal
- pruning tools and equipment, including:
  - inspection
  - care and maintenance
  - storage and transport
- pruning techniques, including:
  - formative
  - preventative
  - natural target pruning
  - sequence (cutting techniques) for branch removal
  - crown modification
  - directional pruning.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to monitor vegetation control work in the vicinity of live electrical apparatus in an electricity supply industry (ESI) environment.

It includes communicating with workers to prevent unsafe work activities and to stop the encroachment of workers, mobile plant, tools and equipment into the safe approach distance.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare to monitor vegetation control work	**1.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2	Hazards are identified, risks assessed and control measures identified and applied
	1.3	Responsibilities of safety observer role are acknowledged and confirmed
	1.4	Communication method is discussed with the worker and confirmed in accordance with workplace requirements
	1.5	Safe approach distances and vegetation clearances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.6	Safety equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in safe working order
	1.7	Worksite is prepared in accordance with the work instructions and workplace requirements
2 Monitor vegetation control work	**2.1**	Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2	Safety equipment and PPE is used in accordance with workplace requirements
	2.3	Safety observer is positioned to ensure an unobstructed view of the work
	2.4	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.5	Vegetation control work is monitored and controlled for safety compliance in accordance with workplace requirements
	2.6	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Incidents or unplanned events are reported in accordance with workplace requirements

3.2 Work documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC27 Monitor safety compliance of vegetation control work in an ESI environment.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
- monitoring vegetation control work including safe approach distances and vegetation clearances
- identifying hazards and assessing risks
- identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- identifying electricity networks, including:
  - low voltage (LV)
  - high voltages (HV)
- maintaining drop zone
- selecting the best position for monitoring and controlling work
- identifying and using selected communication method
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - vegetation clearances
  - emergency response and rescue, including first aid

- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- safety observer:
  - role and responsibilities
  - communication methods
- vegetation cutting techniques
- operation of plant, tools and equipment.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations and codes of practice.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC010 Perform rescue from within a tree in the vicinity of live electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to perform rescue from within a tree in the vicinity of live electrical apparatus.

It includes applying safe approach distances, tree climbing techniques, rescue methods, inspection and use of rescue equipment.

It also includes emergency procedures for energised and non-energised rescue, hazard assessment, site security and reporting requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

UETDRVC006 Control vegetation in the vicinity of live electrical apparatus from within the tree

UETDRVC007 Control vegetation using pruning techniques

UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to respond to a rescue from within a tree	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the rescue response are referred to and confirmed
	1.2 Tools and emergency equipment are checked for safety, functionality and placed in an accessible location to facilitate response and rescue according to workplace requirements
	1.3 Emergency rescue responsibilities are confirmed and clarified with work team prior to work being undertaken
2 Respond and perform rescue from within a tree	**2.1** Emergency situation is assessed in accordance with workplace requirements
	2.2 Emergency responses are activated in accordance with workplace requirements
	2.3 Assistance is requested from work team and/or public, where required
	2.4 Nature of the injury is assessed and communicated
	2.5 First aid is applied, where required
	2.6 Casualty is prepared for descent according to first aid and risk assessments
	2.7 Casualty is lowered safely to the ground with support of rescuer
3 Perform casualty recovery	**3.1** First aid is applied on the ground, where required
	3.2 Emergency assistance is confirmed in accordance with emergency response
4 Complete documentation	**4.1** Incident is reported in accordance with workplace requirements
	4.2 Incident site is secured and entry controlled in accordance with workplace requirements
	4.3 Work documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC34 Undertake release and rescue from a tree near live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC010 Perform rescue from within a tree in the vicinity of live electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
  - vegetation clearances
  - securing the incident site
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using rescue equipment
- performing a rescue from a tree using at least two (2) of the following rescue types:
  - lower casualty on own system
  - lower casualty on additional system
  - lower casualty on the rescuers climbing system
  - pole top (tree)
- using emergency communication system
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - WHS/OHS
  - safe approach distances
  - vegetation clearances
  - incident site security
  - reporting requirements

- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of personal protective equipment (PPE)
- branches/limbs that are unsafe to climb
- rescue equipment, including:
  - storage and maintenance
  - inspection
  - placement
  - components and application
- safe climbing practices, including:
  - ropes, slings and harnesses
  - roping and slinging techniques
  - application of lifelines and ropes
  - load bearing equipment and lifts
- range of emergency situations that may arise
- emergency response procedures in rescuing a climber, including:
  - first aid/cardiopulmonary resuscitation (CPR)
  - climber position with respect to live power lines
  - contacting emergency services
  - assessment of rescue priorities
  - safe rescue of the climber
  - selection of rescue method and equipment
- emergency response procedures in rescuing a person from an energised position, including:
  - climber position with respect to live power lines
  - identification of voltage
  - isolation of supply
  - contacting network operator/asset owners.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations, where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- suitable simulated work environment
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC011 Use specialised plant to cut vegetation above ground in the vicinity of live electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to use specialised plant to cut vegetation above ground in the vicinity of live electrical apparatus in the electricity supply industry (ESI).

It includes carrying out pre- and post-operational checks, vegetation clearances zones, safe approach distances, reporting faults and maintaining operational records and using the plant to safely cut vegetation.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

UETDRVC009 Monitor vegetation control work in the vicinity of live electrical apparatus

Competency Field

Vegetation Control

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare specialised plant	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
	1.2 Work instruction is obtained and confirmed in accordance with workplace requirements
	1.3 Plant and personal protective equipment (PPE) required for the work are determined, obtained and confirmed in safe working order
	1.4 Hazards are identified, risks assessed, and control measures identified and applied
	1.5 Work is prioritised and sequenced for completion in accordance with work instruction and workplace requirements
	1.6 Work permits are organised in accordance with workplace requirements
	1.7 Worksite is prepared in accordance with the work instruction and workplace requirements
	1.8 Safety observer role, responsibility and communication method is discussed and confirmed in accordance with workplace requirements
	1.9 Safe approach distances and vegetation clearances for the work to be performed are determined and confirmed in accordance with workplace requirements
	1.10 Routine pre-operational checks are completed to manufacturer specifications and workplace requirements
2 Operate specialised plant	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 PPE is used in accordance with workplace requirements
	2.3 Hazard control measures are monitored in accordance with workplace requirements
	2.4 Safety observer is positioned to observe the work in accordance with workplace requirements

	2.5	Communication methods between workers and safety observer are used in accordance with workplace requirements
	2.6	Safe approach distances are maintained when the work is being performed
	2.7	Plant is operated in a safe and controlled manner, and monitored for performance and efficiency
	2.8	Environmental implications associated with specialised plant operation are identified, assessed and reported according to workplace requirements
	2.9	Incidents or unplanned events are responded to in accordance with workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work instruction and workplace requirements
	3.2	Work permits are signed off, where appropriate, in accordance with workplace requirements
	3.3	Shutdown procedures for specialised plant are completed to manufacturer specifications and workplace requirements
	3.4	Post-operational checks, minor maintenance of plant is conducted in accordance with workplace requirements
	3.5	Plant is cleaned and returned to storage in accordance with workplace requirements
	3.6	Incidents or unplanned events are reported in accordance with workplace requirements
	3.7	Worksite is cleaned and made safe in accordance with workplace requirements
	3.8	Work documentation is completed in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRVC32 Use specialised plant to cut vegetation above ground level in the vicinity of live electrical apparatus.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC011 Use specialised plant to cut vegetation above ground in the vicinity of live electrical apparatus

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including:
  - work health and safety (WHS)/occupational health and safety (OHS)
  - safe approach distances
  - vegetation clearances
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- operating specialised plant to cut vegetation above ground level in the vicinity of live electrical apparatus
- conducting pre- and post-operational checks specialised plant
- inspecting and maintaining specialised plant
- determining communication method with safety observer
- confirming safety observer is in position in accordance with workplace requirements
- using operational techniques for the specific terrain, including on and off-road environments and weather conditions
- securing, cleaning and storing plant in accordance with manufacturer specifications and workplace requirements
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace

requirements, including:

- WHS/OHS
- safe approach distances
- vegetation clearances

- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- application, purpose and types of work permits
- safety observer:
  - role and responsibilities
  - communication methods
- specialised plant to cut vegetation above ground level in the vicinity of live electrical apparatus, including:
  - mechanical tree trimmer
  - mechanical hedger
  - pre- and post-operational checks
  - safe operation of plant
  - inspection, care, maintenance and transport/loading
  - emergency procedures
- relevant environmental implications associated with the operation of plant
- relevant work documentation
- vegetation control specialised plant, including:
  - work instruction relevant to the vegetation type
  - cutting techniques
  - drop zone
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

UETDRVC012 Coordinate vegetation control operations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to coordinate vegetation control operations in the electricity supply industry (ESI).

It includes control principles, and coordination and implementation of vegetation control work.

It also includes principles of safe working in the vicinity of electrical infrastructure, and roles, responsibilities, and safety of team members.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

UETDREL002 Comply with environmental requirements

UETDREL006 Work safely in the vicinity of live electrical apparatus as a non-electrical worker

UETDRVC001 Apply work health and safety requirements for powerline vegetation control

or

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Vegetation Control

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to coordinate vegetation control operations	**1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
	1.2 Work plan is obtained and confirmed in accordance with workplace requirements
	1.3 Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
	1.4 Hazards are identified, risks assessed, and control measures identified
	1.5 Work permits are determined in accordance with workplace requirements
	1.6 Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
	1.7 Liaison and communication issues with authorised personnel, authorities and stakeholders are resolved to perform work, as required
	1.8 Worksite is prepared in accordance with the work plan and workplace requirements
2 Coordinate vegetation control operations	**2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
	2.2 Work permits are received and signed in accordance with workplace requirements
	2.3 Lifting, working at heights, and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements
	2.4 Hazard control measures are applied and monitored in accordance with workplace requirements
	2.5 Incidents or unplanned events are responded to in

		accordance with workplace requirements
	2.6	Vegetation control operations are coordinated in accordance with workplace requirements
	2.7	Work roles and tasks are allocated according to individual competencies and workplace requirements
	2.8	Quality checks of work are undertaken in accordance with work plan and workplace requirements
3 Complete work and documentation	**3.1**	Completed work is checked for compliance against the work plan and workplace requirements
	3.2	Incidents or unplanned events are reported in accordance with workplace requirements
	3.3	Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
	3.4	Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
	3.5	Work permits are signed off in accordance with workplace requirements
	3.6	Work records, reports and documentation are completed, and appropriate personnel notified in accordance with workplace requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRVC008 Coordinate vegetation control

operations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

Assessment Requirements for UETDRVC012 Coordinate vegetation control operations

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
  - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- coordinating use of tools, equipment and materials in accordance with workplace requirements, including at least three (3) of the following clearing methods:
  - hand clearing
  - growth retardants
  - fire clearing
  - herbicidal clearing
- coordinating use of two (2) of the following types of machinery for assisted clearing:
  - chain saw/pole saw
  - chipper
  - stump grinder
  - earthmoving machine
- coordinating operations working from two (2) of the following levels:
  - elevated work platform (EWP)
  - ladder
  - scaffolding
  - tree
  - ground.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- relevant legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- selection, maintenance and safe use of plant, tools and equipment
- allocation of work roles and tasks according to individual competencies and workplace requirements
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- communication with supply authorities, work teams and stakeholders
- coordination principles of safe working in the vicinity of electrical infrastructure, including:
  - voltage level
  - clearance zones
  - safe approach distances
- ecological principles for vegetation control, including:
  - pruning
  - land degradation
  - basic anatomy, growth and stability
  - endangered plants/animals/insects
- coordination principles and procedures for control of vegetation, including:
  - inspection and control programs
  - determining duration and cost of vegetation control
  - tree climbing, including use of ropes and harnesses
  - cutting techniques, including roping
  - fall zone
  - easement management
  - use, transportation, storage, and disposal of chemicals
  - use of EWPs
  - identification of species
  - traffic management
- emergency response, first aid and rescue procedures
- roles, responsibilities, and safety of team members
- responsibilities of safety observer.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so.

Where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7

AHCARB322 Access trees for inspection

Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 5.0.

Application

This unit describes the skills and knowledge required to access trees for inspection. It does not describe the skills and knowledge required to access trees to conduct arboricultural work, tree pruning or removal.

The unit applies to individuals who work under broad direction and take responsibility for their own work. They use discretion and judgement in the selection, allocation and use of available resources and for solving problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Arboriculture (ARB)

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare site and inspect equipment	1.1 Confirm access to site and scope of works according to workplace procedures 1.2 Undertake a site-specific job safety analysis (JSA), record and implement control measures according to workplace safety procedures 1.3 Confirm availability of first aid and rescue personnel, equipment

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	and procedures 1.4 Conduct pre-operational preparations and safety checks, on ropes, harnesses, tools and climbing equipment 1.5 Select, check and use personal protective equipment
2. Prepare to access tree	2.1 Inspect tree to determine efficient low-risk access route and climbing method through discussion with work team 2.2 Select and prepare climbing equipment according to manufacturer instructions, workplace health and safety regulations and industry standards 2.3 Configure climbing equipment components to form functional tree climbing system appropriate to the access method selected 2.4 Tie, dress, set and finish climbing knots and hitches according to climbing system 2.5 Conduct pre-climb checks of configured systems to ensure compatibility, safety and function according to selected climbing system, industry standards and manufacturer instructions
3. Access tree safely to work position	3.1 Select and install suitable anchor points according to access method selected 3.2 Use climbing equipment to ascend tree to suitable work positions within crown using safe access route 3.3 Undertake transitions between attachment points safely to reach suitable work positions 3.4 Communicate with work team during operations according to work site and environmental conditions using methods agreed with work team 3.5 Maintain awareness and clearances to avoid power lines according to workplace safety procedures
4. Descend from tree	4.1 Descend tree using climbing equipment in a controlled manner 4.2 Remove all climbing equipment safely in a controlled manner according to manufacturer instructions 4.3 Inspect, clean, maintain and store climbing and safety equipment according to manufacturer instructions

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Writing	• Accurately record and complete workplace job safety analysis using clear language, grammar and industry terminology

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCARB322 Access trees for inspection	AHCARB312 Use standard climbing techniques to access trees	Title changed Prerequisite unit removed Performance criteria clarified Foundation skills added Assessment requirements updated	Equivalent

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

Assessment Requirements for AHCARB322 Access trees for inspection

Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 5.0.

Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has used climbing techniques to access at least 2 structurally different trees, including:

- confirmed access to site and scope of works
- identified workplace health, safety and environmental hazards and completed a job safety analysis (JSA) or safe work method statement (SWMS) for the site and activities
- confirmed availability of first aid and rescue personnel, equipment and procedures
- conducted pre-operational safety checks, on ropes, harnesses, tools and equipment
- selected and used personal protective equipment (PPE) and safety equipment during works
- inspected tree and discussed with work team to determine a safe and efficient access route
- selected and prepared climbing equipment for accessing tree
- ascended, navigated though and descended tree canopy using harness and lanyard and safe anchor points, following safe climbing techniques, including:
  - moving rope with prusik technique
  - trunk walking technique
  - use of foot ascenders
- tied, dressed, set and finished the following climbing knots and hitches, including:
  - alpine butterfly
  - blake's hitch
  - scaffold knot
  - double fisherman's bend/prusik loop
  - girth hitch
  - English prusik hitch
  - marlinspike hitch
  - munter hitch

  - clove hitch
  - double-overhand stopper knot
  - bowline
  - running bowline
- communicated with work team during operations using agreed communication procedures
- maintained safe clearances from power lines
- removed all access equipment in a controlled manner on descend from tree
- inspected, cleaned, maintained and stored climbing and personal protective equipment according to manufacturer instructions.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- assessing and selecting different methods for climbing trees
- workplace health, safety, site, environmental and traffic control measures, including:
  - completing JSAs and SWMS for site-specific risks
  - purpose of first aid and rescue personnel, equipment and procedures
  - pre-operational and safety checks, on ropes, harnesses, tools and equipment
  - PPE used when climbing
- inspection, use and maintenance of arborist climbing equipment, including:
  - ropes and their characteristics
  - rope type, construction and materials
  - rope inspection and failure conditions
  - uses of climbing ropes
  - triple-locking carabiners
  - climbing hardware
- purpose, function, selection, tying, dressing, setting, checking and finishing of arborist knots used for climbing techniques
- safety when climbing trees, including:
  - safe working limits of ropes and equipment
  - defects in ropes, tools and equipment
  - climbing harnesses and lanyards
- hazards to avoid when climbing within the tree canopy, including:
  - safe distances from electrical power lines
  - tree structural defects
  - the presence of insects or other animals
  - deciding on low-risk access routes
- environmental impacts of tree access methods, including:
  - potential impact on tree of various climbing methods
  - impact on animal habitat or food source

- communications strategies used when climbing with a work team, including:
  - voice
  - hand
  - electronic communications
- climbing techniques using ropes and harnesses, including:
  - moving rope with prusik technique
  - trunk walking
  - foot ascenders
  - safe transitions between points of attachment
  - low-risk anchor points
  - controlled descent operations
- controlled removal of access equipment
- procedures for inspecting, cleaning, maintaining and storing climbing equipment.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
  - two trees with different canopy structures as stipulated in the performance evidence
- resources, equipment and materials:
  - standard climbing kit
  - harness
  - arborist communications equipment
  - personal protective equipment
  - first aid and emergency response equipment
- specifications:
  - workplace and manufacturer instructions for safe operation, cleaning and storage of the equipment specified in the assessment conditions
- relationships:
  - work team.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. In particular, assessors must have:

- arboriculture vocational competencies at least to the level being assessed
- current arboriculture industry skills directly relevant to the unit of competency being assessed.

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

AHCCHM201 Apply chemicals under supervision

Modification History

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 3.0.
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 1.0.

Application

This unit of competency describes the skills and knowledge required to handle, transport, and apply chemicals under supervision using workplace specified chemicals and application equipment.

The unit applies to individuals working in a broad range of job contexts who undertake defined routine activities under supervision. They exercise limited autonomy within established and well-known parameters, providing solutions to a limited range of predictable problems.

State or territory licensing, legislative or certification requirements apply in some jurisdictions.

Pre-requisite Unit

Nil

Unit Sector

Chemicals (CHM)

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to handle chemicals	1.1 Confirm the activity related to chemical handling to be undertaken with supervisor

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.2 Identify and select tools and equipment required according to supervisor instructions 1.3 Identify health and safety hazards and risks and apply controls according to supervisor instructions and workplace procedures 1.4 Select, ensure serviceability, fit and use personal protective equipment (PPE)
2. Check application equipment	2.1 Carry out pre-operational checks of application equipment and identify and replace any damaged or worn components or report to supervisor 2.2 Prepare application equipment for use according to workplace practice and safe chemical handling processes
3. Handle and transport chemicals	3.1 Confirm safety precautions for the handling and transport of chemicals with supervisor 3.2 Handle and transport chemicals according to chemical label, safety data sheets and supervisor instructions
4. Prepare chemical for application	4.1 Interpret and apply chemical label instructions according to safety data sheets for the chemical or substance being used 4.2 Select and use appropriate mixing equipment 4.3 Measure, mix and load application equipment with chemical according to application rates 4.4 Clear chemical spills according to chemical label and supervisor instructions 4.5 Check that output of application equipment is correct and in accordance with chemical application plan
5. Apply chemicals	5.1 Assess and record weather conditions and forecasts prior to and during application according to workplace requirements 5.2 Apply chemical safely according to chemical application plan, chemical label and supervisor instructions 5.3 Monitor conditions for application and take appropriate action when conditions are unsuitable according to workplace procedures 5.4 Minimise risks to others, product integrity and the environment prior to and during application
6. Finalise work	6.1 Clean and store PPE and application equipment in accordance with manufacturers and health and safety in the workplace

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	requirements 6.2 Dispose of excess chemicals and clean containers in accordance with label instructions and regulatory requirements 6.3 Complete incident reports according to workplace procedures 6.4 Complete chemical application records according to workplace procedures 6.5 Store unused chemical and products according to workplace procedures 6.6 Adhere to all re-entry requirements for treated areas

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	• Interpret instructions, chemical labels and safety documentation to identify relevant and key information to apply to mixing and application of chemicals
Writing	• Use clear language and correct concepts and terminology when reporting incidents and completing chemical application records
Numeracy	• Perform basic mathematical calculations when measuring and mixing chemicals and checking chemical application equipment
Oral Communication	• Use clear language, concepts, tone and pace appropriate when confirming chemical application parameters with supervisor
Get the work done	• Follow clearly defined instructions and sequencing, and monitors own progress for the task, seeks assistance when necessary

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

AHCCHM201 Apply chemicals under supervision Release 2	AHCCHM201 Apply chemicals under supervision Release 1	Minor changes to Performance Criteria for clarity Updated Performance Evidence and Knowledge Evidence	Equivalent unit

Links

Companion Volumes, including Implementation Guides, are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

Assessment Requirements for AHCCHM201 Apply chemicals under supervision

Modification History

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 3.0.
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 1.0.

Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit. There must be evidence that the individual has on at least one occasion demonstrated that chemicals have been applied under supervision, ensuring they have:

- identified hazards and risks and adopted safe work practices and used appropriate personal protective equipment (PPE) according to supervisors' instructions
- confirmed activity with supervisor and identified and selected tools and equipment necessary for the application of chemical treatment
- carried out pre-operational checks of application equipment and made it ready for operation
- handled and transported chemicals to be used according to chemical labels and supervisors' instructions
- followed directions on chemical labels and relevant safety data sheets to safely mix and prepare chemicals
- selected appropriate measuring equipment and measured, mixed and loaded application equipment with chemicals safely and correctly
- ensured chemical spills were cleared according to chemical label instruction and supervisor instructions
- checked the application equipment for output against plan and applied chemical safely complying with weather conditions
- monitored and recorded weather and applied chemical appropriate to prevailing conditions
- maintained a healthy and safe condition for the environment and others while applying and following chemical application
- cleaned application equipment and PPE and disposed of waste according to equipment manufacturer instructions, chemical label and supervisor instructions
- complied with equipment manufacturer instructions, chemical label and supervisor instructions

- maintained chemical application records and incident reports according to workplace procedures
- stored protection equipment, application equipment and unused chemicals according to workplace procedures.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- various handling and transport techniques and requirements for chemicals
- structure and content of chemical labels and safety data sheets and their use and purpose for safe chemical application
- principles and methods of measuring, mixing and applying chemicals
- features and functions of a range of application equipment relevant to the workplace their operations, and maintenance requirements
- risk factors to be taken into account for human and animal health, spillage and environmental impact relevant to chemical use before, during and following chemical application
- basic chemical groupings and types used in the workplace, including:
  - the of mode of action
  - the impact on chemical safety
  - application methods
- paths of entry of poisons into the body and the methods of limiting exposure through practices and personal protective clothing
- maintenance practices for chemical application related equipment and PPE and disposal procedures for chemical contaminants and containers
- assessing weather conditions and the impact on safe application of chemicals
- components of a workplace chemical application plan
- chemical related records and reports and their purpose.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
  - skills must be demonstrated in a typical workplace environment or an environment that accurately represents workplace conditions
  - access to chemical store
- resources, equipment and materials:
  - common chemicals
  - PPE
  - chemical application equipment
  - chemical measuring and mixing equipment
- specifications:

- workplace documents, including work instructions and procedures
- chemical labels and safety data sheets
- chemical application plan and relevant chemical application rates
- manufacturers' operation and maintenance instructions for chemical measuring and application equipment

- relationships:
  - supervisor.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volumes, including Implementation Guides, are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

AHCMOM213 Operate and maintain chainsaws

Modification History

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 3.0.
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 1.0.

Application

This unit of competency describes the skills and knowledge required to safely operate a hand-held chainsaw and maintain it in working condition.

This unit applies to cross-cutting fallen timber using safe cutting techniques.

The unit applies to individuals who apply low risk work procedures and comply with worksite health and safety requirements when operating hand-held chainsaws to carry out routine work.

No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Machinery operation and maintenance (MOM)

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assist in preparation of work-site	1.1 Identify location of worksite and fallen timber from scope of works and confirm with supervisor 1.2 Identify site hazards, assess risks and report to supervisor

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.3 Confirm first aid and emergency personnel, equipment and procedures 1.4 Document and implement site health and safety in the workplace, environmental and traffic control measures according to workplace procedures
2. Recognise and apply workplace safety procedures	2.1 Identify hazards and risks relevant to the maintenance and operation of chainsaws and implement safe working practices to manage risks 2.2 Select, fit and use personal protective equipment according to workplace safety procedures 2.3 Confirm with supervisor relevant licensing and legislative requirements with regard to the operation of chainsaws 2.4 Transport chainsaw safely according to operation and maintenance manual
3. Check and prepare chainsaw for use	3.1 Select tools and materials required for maintenance 3.2 Conduct routine checks and maintenance prior to operation, according to chainsaw operation and maintenance manual 3.3 Calculate required fuel oil ratios prior to mixing 3.4 Mix fuel and fuel chainsaw according to operation and maintenance manual 3.5 Identify, tag, record and report chainsaw faults or malfunctions to supervisor
4. Operate chainsaw	4.1 Communicate with work team during operations using voice, hand or whistle signals 4.2 Place supports to ensure a stable base for cutting 4.3 Identify materials to be cut and position them for operation 4.4 Visually assess material to be cut for defects and embedded hazards 4.5 Determine cutting methods appropriate to material type and implement risk controls 4.6 Select and use tools associated with chainsaw use 4.7 Operate chainsaw to cross-cut timber using documented low risk work methods 4.8 Identify and report work-site communication issues to supervisor

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	4.9 Identify and report environmental impacts of chainsaw operation to supervisor
5. Complete and check chainsaw operation	5.1 Record and report chainsaw damage, malfunction and irregular performance according to workplace procedures 5.2 Clean and store chainsaw according to workplace procedures and operation and maintenance manual 5.3 Dispose of debris from operation in accordance with environmental requirements 5.4 Maintain workplace documentation according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	• Interpret textual information from a range of sources to identify relevant and key information about workplace operations
Writing	• Document site health and safety in the workplace, environmental and traffic control measures
Oral communication	• Use clear language to report hazards and risks and to confirm work site, first aid and emergency personnel, equipment and procedures • Participate in verbal exchanges to respond to questions and clarify information
Numeracy	• Calculate fuel oil ratios and fuel quantities
Navigate the world of work	• Recognise and follow workplace requirements, including safety requirements, associated with own role and area of responsibility
Interact with others	• Use verbal and non-verbal communications with work team during operations using voice, hand and whistle signals

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Personal protective equipment must include:	• safety helmet • mesh visor • gloves • hearing protection • safety glasses or goggles • safety boots.
Routine checks and maintenance must include at least two of the following:	• checking and adjusting bar • cleaning air filter • cleaning and/or replacing spark plug • sharpening chain.
Supports must include at least one of the following:	• fallen timber • saw horse trestle • v-shaped supports.
Cutting methods must include:	• pulling chains cuts (bottom of bar) • pushing chainsaw cuts (top of bar) • bore / plunge cuts (tip of bar).
Tools must include:	• bars • chains • files • plug spanner.

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCMOM213 Operate and maintain chainsaws Release 2	AHCMOM213 Operate and maintain chainsaws Release 1	Minor changes to performance criteria and range of conditions	Equivalent unit

Links

Companion Volumes, including Implementation Guides are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

Assessment Requirements for AHCMOM213 Operate and maintain chainsaws

Modification History

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 3.0.
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 1.0.

Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit. There must be evidence that the individual has safely operated a hand-held chainsaw at least once, maintained it in working condition and demonstrated the following:

- determined site location for work and work details and clarified with supervisor
- identified site hazards, assessed risks and reported to supervisor
- confirmed work zone with work crew and monitored site
- confirmed first aid and emergency personnel, equipment and procedures
- applied hazard and risk assessment and implemented controls for chainsaw use
- performed routine checks and maintenance for chainsaw usage according to operation and maintenance manual
- identified, tagged and reported chainsaw faults and malfunctions
- recorded and implemented site health and safety in the workplace, environmental and traffic control measures
- used personal protective equipment that complies with Australian Standards
- safely cross-cut fallen timber using compression and tension cuts with a hand held chainsaw
- used appropriate tools and materials to maintain chainsaw
- applied environmentally responsible workplace practices
- applied low risk work practices including stopping, disengaging quickly and dealing with foreign matter
- cleaned and stored chainsaw
- followed workplace procedures relevant to safely operating a chainsaw.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- the principles and practice for operating chainsaws
- chainsaw routine checks and maintenance according to operation and maintenance manual, including:
  - checking and adjusting bar
  - cleaning air filter
  - cleaning and replacing spark plug
  - sharpening chain
- workplace safe operating procedures
- hazards and risks when operating a chainsaw
- relevant Australian Standards concerning chainsaw operation including use of personal protective equipment
- components of chainsaws and their respective functions
- common defects in woody materials
- cutting methods and techniques, patterns and sequence of cuts
- health and safety in the workplace requirements for the operation of a chainsaw including caution and hazard signs and symbols
- environmental impacts associated with operating chainsaws.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
  - a workplace setting or an environment that accurately represents workplace conditions
  - personal protective equipment must be worn whilst operating chainsaw
  - individual must not be under the influence of alcohol or drugs
  - individual must not be taking any medication (prescribed or otherwise) that may impair judgement
- resources, equipment and materials:
  - chainsaws
  - chainsaw tools
  - wood
  - safety equipment and personal protective equipment applicable to the task being undertaken
- specifications:
  - chainsaw manufacturer specifications and operator manuals
- timeframes:
  - according to the job requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volumes, including Implementation Guides are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

AHCMOM304 Operate machinery and equipment

Modification History

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 3.0.
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 1.0.

Application

This unit of competency describes the skills and knowledge required to prepare and operate machinery and equipment in a safe and controlled manner that is used principally in agriculture, horticulture, and conservation and land management work.

This unit does not apply to chainsaws, tractors, vehicles or earth moving equipment.

The unit applies to individuals who operate machinery and equipment under broad direction, and take responsibility for their own work.

No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Machinery operation and maintenance (MOM)

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare machinery and equipment for use	1.1 Confirm activity to be undertaken, including identifying potential hazards and risks and implementing safe working practices to manage risks

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.2 Source and interpret relevant machinery and equipment operation and maintenance manual and manufacturer instructions 1.3 Assess the work site and confirm the suitability of the machinery and equipment for the task 1.4 Select and maintain personnel protective equipment applicable to the machinery and equipment to be operated and the task to be undertaken 1.5 Fit and use personal protective equipment according to workplace procedures and job requirements 1.6 Conduct routine pre-operational checks as described in operation and maintenance manual 1.7 Replace and report damaged or worn components in line with workplace reporting requirements 1.8 Attach ancillary equipment and check for correct operation
2. Operate machinery and equipment	2.1 Operate machinery according to task requirements, conditions, operation and maintenance manual and manufacturer specifications 2.2 Monitor machinery performance and efficiency and make adjustments 2.3 Continually monitor hazards and risks, and ensure safety of self, other personnel, plant and equipment
3. Complete machinery and equipment operation	3.1 Conduct shut down of machinery according to workplace procedures 3.2 Perform routine operational servicing and minor maintenance according to operation and maintenance manual 3.3 Identify and report malfunctions, faults, irregular performance or damage according to workplace procedures 3.4 Clean, secure and store machinery and equipment according to workplace procedures 3.5 Maintain machinery and equipment use records in required format

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	• Interpret textual information from a range of sources to identify relevant and key information about workplace operations
Writing	• Document machinery and equipment use
Oral communication	• Use clear language to report malfunctions, faults, irregular performance or damage
Numeracy	• Calculate quantities of machinery fluids including oil and fuel
Navigate the world of work	• Recognise and follow workplace requirements, including safety requirements, associated with own role and area of responsibility

Range of Conditions

This section specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Machinery and equipment must include at least one of the following:	• hydraulic equipment • stationary engines • spraying equipment • mulching and chipping equipment • powered trailers • three point linkage equipment.
Pre operational checks must include:	• machinery and equipment damage and serviceability • engine oil • fuel • machinery and equipment controls • reporting and tagging defects.

Unit Mapping Information

Code and title	Code and title	Comments	Equivalence status

current version	previous version		
AHCMOM304 Operate machinery and equipment Release 2	AHCMOM304 Operate machinery and equipment Release 1	Minor changes to performance criteria, foundation skills and range of conditions	Equivalent unit

Links

Companion Volumes, including Implementation Guides are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

Assessment Requirements for AHCMOM304 Operate machinery and equipment

Modification History

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 3.0.
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 1.0.

Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit. There must be evidence that the individual has operated agricultural or horticultural machinery and equipment at least once and has:

- identified and reported workplace hazards and implemented safe operating procedures
- carried out machinery and equipment pre-operational checks including basic servicing and maintenance according to operation and maintenance manual
- operated machinery and equipment in a safe and controlled manner consistent with task requirements, conditions, operation and maintenance manual and manufacturer specifications
- attached ancillary equipment and checked for correct operation
- carried out machinery shut down procedures
- recognised, reported and documented defects in equipment and machinery and operational capacity
- cleaned, secured and stored machinery and equipment.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- hazards and risks associated with machinery and equipment operation
- pre-operational and safety checks for machinery and equipment according to operation and maintenance manual
- operating principles and operating methods for machinery and equipment
- procedures for cleaning, securing and storing machinery, equipment and materials
- risks associated with the operation of machinery and equipment in different weather conditions and difficult terrain conditions

- duty of care to self, others and the environment
- workplace procedures applicable to health and safety in the workplace requirements for operating machinery and equipment.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
  - a workplace setting or an environment that accurately represents workplace conditions
  - individual must not be under the influence of alcohol or drugs
  - individual must not be taking any medication (prescribed or otherwise) that may impair judgement
  - individual must not be in a fatigued state when operating machinery and equipment
- resources, equipment and materials:
  - a range of machinery and equipment
  - enclosed toe shoes
  - safety equipment and personal protective equipment applicable to the machinery and equipment being used and the task being undertaken
- specifications:
  - machinery and equipment operation and maintenance manuals
  - industry and workplace biosecurity procedures applicable to machinery and equipment operation
  - records must include details of the machinery and equipment that the individual was assessed on
- timeframes:
  - according to the job requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volumes, including Implementation Guides are available at VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

AHCPCM204 Recognise plants

Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 6.0.

Application

This unit of competency describes the skills and knowledge required to recognise commonly encountered plants, including desired species and weeds, and to document and confirm plant identification.

The unit applies to individuals who recognise plants under general supervision with limited autonomy or accountability.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Plant Culture and Management (PCM)

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for plant recognition	1.1 Confirm work activity and instructions with supervisor 1.2 Recognise workplace health and safety hazards, and report to supervisor 1.3 Select and prepare tools, equipment and material for plant recognition activity 1.4 Locate a range of desirable and non-desirable plants requiring

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	recognition
2. Recognise specified plants	2.1 Conduct a visual inspection on plants to identify plant family features and classifications 2.2 Record brief descriptions of plant habits, characteristics and significant features 2.3 Use available resources to assist with plant recognition 2.4 Seek advice to assist with plant recognition from appropriate personnel 2.5 Recognise and name specified plants using their identifiable characteristics
3. Identify plants	3.1 Record plant information according to workplace requirements 3.2 Confirm plant identification with supervisor, and refer to plant by botanical name

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	• Interpret textual, photographic and drawn information from a range of sources to identify relevant and key information about plant recognition
Writing	• Record plant habits, characteristics, significant features and relevant information
Oral communication	• Initiate discussions with appropriate personnel and supervisor, using clear language to discuss plant recognition

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCPCM204 Recognise plants	AHCPCM201 Recognise plants	Minor changes to application Major changes to performance criteria Foundation skills added Assessment requirements updated	Not equivalent

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

Assessment Requirements for AHCPCM204 Recognise plants

Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 6.0.

Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has recognised a range of plants from a range of plant families and classifications, including:

- annual
- biennial
- perennial
- evergreen and deciduous
- trees
- shrubs
- ground cover
- climbers
- monocot.

There must also be evidence that the individual has:

- applied workplace health and safety requirements applicable to recognising plants
- selected and prepared tools, equipment and materials for use in recognition activity
- located desirable and non-desirable plants requiring recognition
- recognised and described plant habits, characteristics and significant features
- used appropriate reference material to assist with plant recognition
- recorded information about identified plants.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- workplace requirements applicable to health and safety in the workplace for recognising plants
- principles and practices of plant recognition, including:
  - plant morphology and physiology as they relate to recognising plants

- plant nomenclature
- resources for obtaining information about plants
- plant recognition techniques.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
  - a workplace setting or an environment that accurately represents workplace conditions
- resources, equipment and materials:
  - plants
  - plant recognition resources and equipment
  - access to internet and field guide reference materials applicable to plant recognition
- specifications:
  - workplace requirements applicable to health and safety in the workplace for recognising plants
- relationships:
  - appropriate personnel and supervisor
- timeframes:
  - according to job requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

AHCPCM205 Fell small trees

Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 6.0.

Application

This unit of competency describes the skills and knowledge required to prepare for tree felling, fell small trees and complete felling operations where hazards have been assessed as low risk.

The unit applies to individuals who apply low risk work procedures and comply with worksite health and safety requirements when felling trees under general supervision, with limited autonomy or accountability.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

The prerequisite unit of competency for this unit is:

- AHCMOM213 Operate and maintain chainsaws.

Unit Sector

Plant Culture and Management (PCM)

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Assist in preparation of worksite	1.1 Identify location of worksite and correct tree from scope of works, and confirm with supervisor 1.2 Identify site hazards, assess risks and report to supervisor 1.3 Confirm work zone with work crew, and monitor site

Elements	**Performance Criteria**
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	1.4 Confirm first aid and emergency personnel, equipment and procedures 1.5 Document and implement site health and safety in the workplace, environmental and traffic control measures according to workplace procedures
2. Identify tree felling requirements	2.1 Identify hazards and risks relevant to felling operation, and implement safe working practices to manage risks 2.2 Examine topography and site conditions 2.3 Identify factors influencing the tree felling operation, and confirm with supervisor 2.4 Identify trees considered outside own skill level for felling, and seek assistance from appropriate personnel 2.5 Determine natural direction of fall, safe fall zone and exclusion zone, and confirm with supervisor 2.6 Confirm tree felling operations and instructions with supervisor prior to undertaking work
3. Prepare for tree felling	3.1 Select and prepare felling equipment and component options appropriate to the task being undertaken 3.2 Prepare, transport and position support tools to minimise felling delays 3.3 Select and maintain safety and personal protective equipment (PPE) according to workplace health and safety requirements 3.4 Fit and use safety equipment and PPE applicable to the task being undertaken 3.5 Clear fall zone of obstacles and articles that may be damaged by felled tree 3.6 Establish clear escape route appropriate to site
4. Fell tree	4.1 Note and monitor location of other personnel 4.2 Carry out tree felling operation according to scope of works 4.3 Communicate with work team during operations using voice, hand or whistle signals 4.4 Determine standard tree felling techniques, patterns and cut sequences by ground conditions and state of canopy 4.5 Take corrective action in response to changing conditions or

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	problems encountered 4.6 Use planned escape route when tree starts to fall 4.7 Monitor fall of tree and movement on ground until felled tree is stable 4.8 Undertake tree felling activities using documented low risk work methods
5. Complete tree felling operation	5.1 Determine appropriate method of clearing the site of felled tree 5.2 Select and use machinery required for removal of felled tree 5.3 Clear fall site of tree and all tree debris according to supervisor instructions 5.4 Clean and return machinery, tools and equipment to required location 5.5 Identify and report unserviceable machinery, tools and equipment according to workplace procedures 5.6 Report tree felling activities according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	• Interpret textual information from a range of sources to identify relevant and key information about tree felling operations
Oral communication	• Use clear language to report hazards and risks and to confirm worksite, first aid and emergency personnel, equipment and procedures, and to report felling activities and unserviceable machinery, tools and equipment • Participate in verbal exchanges to respond to questions and clarify information • Use verbal and non-verbal communications with work team during operations using voice, hand and whistle signals

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCPCM205 Fell small trees	AHCPCM203 Fell small trees	Minor changes to application Major changes to performance criteria Foundation skills added Assessment requirements updated	Not equivalent

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

Assessment Requirements for AHCPCM205 Fell small trees

Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 6.0.

Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has felled small trees on at least three occasions, and has:

- applied workplace health and safety requirements applicable to felling small trees
- applied principles and practices of small tree felling operations
- applied documented low risk work methods and workplace procedures
- assessed topography and site conditions, identified factors influencing tree felling operation, and confirmed findings with supervisor
- prepared, transported and positioned support tools to minimise felling delays
- safely operated a chainsaw to fell small trees
- reported felling activities, and machinery, tool and equipment unserviceability according to workplace procedures.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- workplace requirements applicable to health and safety in the workplace for small tree felling operations
- principles and practices of small tree felling operations, including:
  - corrective action
  - emergency and first aid procedures
  - felling equipment and components
  - first aid and emergency personnel, equipment and procedures
  - ground conditions
  - how to determine natural direction of fall
  - how to establish a clear escape route
  - industry standard terminology

- obstacles and articles that may be damaged by felled trees
- positioning support tools
- safe operating procedures for felling small trees
- safe fall and exclusion zones
- selection, preparation and appropriate equipment for task
- standard tree felling techniques, patterns and cut sequences
- topography, site conditions and other factors influencing tree felling operations
- low risk work methods and workplace procedures for small tree felling operations.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
  - a workplace setting or an environment that accurately represents workplace conditions
  - personal protective equipment (PPE) must be worn whilst operating chainsaw
  - individual must not be under the influence of alcohol or drugs
  - individual must not be taking any medication (prescribed or otherwise) that may impair judgement
- resources, equipment and materials:
  - chainsaws
  - chainsaw tools
  - small trees
  - tree felling machinery, tools and equipment
  - safety equipment and PPE applicable to the task being undertaken
- specifications:
  - workplace requirements applicable to health and safety in the workplace and small tree felling operations
  - documented low risk work methods and workplace procedures applicable to small tree felling operations
- relationships:
  - team members, supervisor
- timeframes:
  - according to job requirements.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72

AVIW0006 Perform infrastructure inspections using remote operated systems

Modification History

Release 1. This is the first release of this unit of competency in the AVI Aviation Training Package.

Application

This unit involves the skills and knowledge required to operate and manage remote pilot aircraft systems (RPAS) when inspecting infrastructure in compliance with relevant regulatory requirements of the Civil Aviation Safety Authority (CASA) and national operating standards.

Infrastructure includes but is not limited to electricity pylons, gas pipelines, cables, roads and rail infrastructure.

It includes operating and managing RPAS during normal flight, and managing RPAS during abnormal and emergency procedures.

This unit addresses aviation technical skill requirements (physical, mental and task-management abilities) related to equipment and system operations of flight or ground operations personnel and contributes to safe and effective performance in complex aviation operational environments.

Operations are conducted as part of commercial and military aircraft activities across a variety of operational contexts within the Australian aviation industry.

Work is performed independently or under limited supervision within a single-pilot or multi-crew RPAS environment.

Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Pre-requisite Unit

Not applicable.

Competency Field

W – Equipment and Systems Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Conduct pre-flight actions	**1.1** Own fitness for flight and planned operations is self-assessed
	1.2 Operational aircraft type is determined for suitability for type of aerial infrastructure inspection operation
	1.3 Aircraft and role equipment are checked and assessed for serviceability prior to commencing flight operations
	1.4 Required applicable maintenance documentation is compiled and checked for accuracy and completeness
	1.5 Role equipment calibration is checked and adjusted as required
	1.6 Planned aerial infrastructure inspection operations are assessed for potential or actual hazards
	1.7 Fuel/power requirements are determined and established within aerial operational plans
	1.8 Issues relating to aircraft weight, performance, dimensions, load and meteorological conditions are identified and managed
2 Conduct planning and risk management	**2.1** Suitability of current and forecast weather is determined
	2.2 Infrastructure inspection plan is developed and used as the basis for aerial application operations
	2.3 Potential and actual hazards and operational requirements are identified, risks to aerial infrastructure inspection operations are assessed and appropriate risk controls implemented in accordance with the application management plan
	2.4 Area map is correctly interpreted
	2.5 Acceptable aircraft performance for aerial infrastructure inspection operational conditions is confirmed through performance planning

	2.6	Normal and abnormal operational communications and signals are confirmed
3 Conduct aerial mapping and modelling	**3.1**	Appropriate aerial survey plans are developed for conducting safe aerial mapping and modelling operations
	3.2	Operating area boundaries are established and environmentally sensitive areas identified, including areas that are noise sensitive, biologically susceptible, populated and urban, and restricted or dangerous
	3.3	Potential emergency or alternate landing areas are identified and/or established for contingency operations
	3.4	Environmental hazard factors affecting aerial mapping and modelling operations are considered
	3.5	Wind velocity and direction are assessed for effect on operations
	3.6	Infrastructure inspection operations is conducted safely in accordance with the application management plan
	3.7	Infrastructure inspection equipment is operated within scope of the plan
	3.8	Decisions to suspend or continue safe aerial infrastructure inspection are taken based on planned or actual operating conditions
	3.9	Power lines within and outside the treatment area during an aerial survey are identified and accurately assessed to support safe operations in vicinity of power lines, including safe flying parallel to wires
4 Perform infrastructure inspections	**4.1**	Infrastructure and condition assessment criteria are verified and understood prior to the inspection
	4.2	Data capture process is selected based on the type of infrastructure
	4.3	Various types of structural failures are recognised and recorded
	4.4	Infrastructure data and records are provided in accordance with client requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit Mapping Information

No equivalent unit.

Links

AVI Training Package Companion Volume Implementation Guide available on VET Net: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=4725260a-0af3-4daf-912b-ef1c2f3e5816

Assessment Requirements for AVIW0006 Perform infrastructure inspections using remote operated systems

Modification History

Release 1. This is the first release of this unit of competency in the AVI Aviation Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- adapting to differences in equipment and operating environment in accordance with standard operating procedures (SOPs)
- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant legislation and workplace procedures
- communicating effectively with others
- completing relevant documentation
- identifying and correctly using relevant equipment
- implementing contingency plans
- implementing work health and safety (WHS) procedures and relevant regulations
- interpreting and following operational instructions and prioritising work
- interpreting remote pilot aircraft systems (RPAS) displays
- modifying activities depending on workplace contingencies, situations and environments
- monitoring and anticipating operational problems and hazards and taking appropriate action
- monitoring work activities in terms of planned schedule
- operating electronic communications equipment to required protocol
- performing systematic scan technique for monitoring RPAS, sub-systems (equipment) and devices
- reading, interpreting and following relevant regulations, instructions, procedures, information and signs
- reporting and/or rectifying problems, faults or malfunctions promptly in accordance with workplace procedures
- selecting and using required personal protective equipment (PPE) conforming to industry and WHS standards
- undertaking fault finding in RPAS
- using automated systems to manage workload
- working collaboratively with others
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- aeronautical decision-making processes relevant to RPAS operations
- effective communication
- error management, including error types, causes and consequences
- fatigue risk management
- human factors relevant to RPAS operations
- human performance and its limitations, including the senses, memory and situational awareness
- normal, minimum and maximum fuel pressures or battery/power levels and power draw
- risk identification, analysis and control
- RPAS as applicable to rating/endorsement requirements, including:
  - battery/fuel/power system:
    - use of a schematic diagram of battery/fuel/power system to explain layout and normal operating procedures
    - likely faults that may affect battery/fuel/power system
    - emergency operating procedures for battery/fuel/power system
    - operation of /battery/fuel/power selector panel or display
    - use of cross-feed or power distribution
    - full battery/fuel capacity and fuel grade
  - flight environment information, including :
    - head-up display (HUD) suitable for flight
    - RPAS control systems suitable for flight indications, including height, speed, direction and location
  - electrical system, including:
    - use of a schematic diagram of electrical system to explain type/s of electrical system
    - structural failures
    - likely faults that may affect electrical system
    - emergency operating procedures for electrical system
    - voltage and amperage of battery or power cell
    - number and output of generators
    - methods of circuit protection
    - location of fuses and circuit breakers
    - precautions to be taken when operating electrical devices
    - instruments and displays operated by electrics
  - detection and avoidance systems, including:
    - surveillance and collision avoidance functions of detection and avoidance systems
    - system limitations, selectivity and inhibits

    - basic components of detection and avoidance systems
    - identification and demonstration of controls or explanation of function of RPAS control station
    - detection and avoidance systems visual displays and symbology
    - functions of audio alerts and annunciations
    - appropriate crew response to multiple detection and avoidance systems events
    - recall of radiotelephone procedures following a detection and avoidance system alert
    - requirements for a written report of a detection and avoidance systems alert and to whom it must be submitted
  - automated systems, including:
    - limitations of automated systems
    - operating procedures for systems, such as flight management system, auto throttle/engine/thrust control, flight director system, automated aircraft navigation systems, and automated engine condition and monitoring system
    - workload management procedures for utilising automated systems
    - warning systems/indicators to identify automated systems failure
  - RPAS checklists, including:
    - explanation of the normal system operating procedures of RPAS, sub-systems and devices used to operate specific RPAS, including use of published scans and checklists, immediate action items, warnings and limitations
- stress, workload and time pressure management.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- acceptable means of simulation assessment
- applicable documentation, including workplace procedures, regulations, codes of practice and operation manuals
- relevant materials, tools, equipment and PPE currently used in industry.

Links

AVI Training Package Companion Volume Implementation Guide available on VET Net: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=4725260a-0af3-4daf-912b-ef1c2f3e5816

BSBFIN501 Manage budgets and financial plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to undertake financial management in an organisation or work area. It includes planning and implementing financial management approaches and supporting and evaluating effectiveness of financial management processes.

The unit applies to managers in a wide range of organisations and sectors who have responsibility for the effective use of financial resources within work teams. They are responsible for ensuring that financial resources are managed in line with the financial objectives of the team and organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Financial Literacy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan financial management approaches	1.1 Access budget and financial plans for work team 1.2 Evaluate budget and financial plan outcomes with required organisational personnel 1.3 Negotiate any changes required to be made to budget and financial plans with required organisational personnel 1.4 Prepare contingency plans in the event that initial plans need to be varied
2. Implement and monitor financial	2.1 Communicate details of agreed budget and financial plans to relevant team members

ELEMENT	PERFORMANCE CRITERIA
management plans	2.2 Support team members to access resources and systems to perform required roles 2.3 Implement processes to monitor actual expenditure, control costs and modify contingency plans as required according to financial objectives 2.4 Report on budget and expenditure according to organisational protocols
3. Review and evaluate financial management plans	3.1 Collect information on effectiveness of financial management processes within work team 3.2 Analyse variance between actual and budgeted finances 3.3 Identify and recommend improvements to existing financial management processes 3.4 Implement agreed improvements according to financial objectives of work team and organisation 3.5 Evaluate agreed improvements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses a wide range of mathematical calculations to analyse numeric information in budgets or financial plans
Oral communication	• Presents information about financial issues and requirements to a range of audiences using structure and language to suit audience • Uses active listening and questioning to clarify information and to confirm understanding
Reading	• Interprets and analyses information to determine activities required
Writing	• Records information in correct forms and prepares materials which convey detailed and factual content according to internal procedures
Teamwork	• Uses a range of strategies to connect, collaborate and cooperate with other work colleagues in activities requiring collective effort and diverse skills and knowledge
Initiative and enterprise	• Applies organisational requirements in undertaking own work
Planning and organising	• Uses logical processes in planning, implementing and evaluating complex tasks and developing alternative strategies to achieve goals

SKILL	DESCRIPTION
	and timelines
Technology	• Uses a range of digital technologies to access, filter, compile, integrate and logically present complex information from multiple sources

Unit Mapping Information

Supersedes and is equivalent to BSBFIM501 Manage budgets and financial plans.

Supersedes but is not equivalent to BSBGOV403 Analyse financial reports and budgets.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBFIN501 Manage budgets and financial plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage the budget and financial plan of an organisation for one reporting period.

In the course of the above, the candidate must:

- communicate with relevant people to clarify budget and financial plans, negotiate changes and disseminate information
- prepare, implement and modify financial contingency plans
- monitor expenditure and control costs
- support and monitor team members
- report on budget and expenditure
- review and make recommendations for improvements to financial processes
- meet record-keeping requirements for Australian Taxation Office (ATO) and for auditing purposes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- basic accounting principles
- types of budgets and financial plans
- legislation and current ATO requirements, including the Goods and Services Tax (GST)
- key requirements for financial record keeping and auditing
- principles for managing work teams
- principles and techniques involved in managing:
  - budgeting
  - cash flows
  - electronic spreadsheets

- Goods and Services Tax
- ledgers and financial statements
- profit and loss statements
- evaluation of budget and financial plans.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace policies and procedures
- workplace budgets and financial plans.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBHRM523 Coordinate the learning and development of teams and individuals

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to coordinate the learning and development of teams and individuals. Particular emphasis is on the coordination of strategies to facilitate and promote learning and to monitor and improve learning performance.

The unit applies to individuals who have a role in coordinating the development of a learning environment in which work and learning come together. At this level work will normally be carried out within complex and diverse methods and procedures, which require the exercise of considerable discretion and judgement, using a range of problem solving and decision-making strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Human Resources

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Coordinate creation of learning opportunities	1.1 Identify potential formal and informal learning opportunities 1.2 Identify learning requirements of teams and individuals according to requirements of organisation and available learning opportunities 1.3 Coordinate implementation of learning plans and ensure that learning plans reflect diversity of needs 1.4 Review relevant organisational procedures and ensure they

ELEMENT	PERFORMANCE CRITERIA
	support individual and team access to learning opportunities, where required 1.5 Consult with training and development specialists and use their advice to contribute to learning opportunities
2. Coordinate learning	2.1 Coordinate strategies to ensure workplace learning opportunities are used by teams and individuals 2.2 Coordinate implementation of policies and procedures to encourage team members to assess their own competencies and identify their own learning and development needs 2.3 Communicate benefits of learning with others in the team and organisation 2.4 Recognise workplace achievement by relevant recognition, feedback and rewards
3. Monitor and improve learning effectiveness	3.1 Monitor team and individual learning performance to determine type and extent of any additional work-based support required 3.2 Use feedback from individuals and teams to identify and recommend improvements in future learning arrangements 3.3 Suggest adjustments, negotiated with training and development specialists, for improvements to learning 3.4 Record and report learning and development of teams and individuals

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets textual information obtained from a range of sources and determines how content may be applied to individuals and to organisational requirements
Writing	• Uses information from a range of sources to develop and document plans, strategies and feedback according to organisational requirements • Maintains records using correct technical and organisational vocabulary
Oral Communication	• Present information and opinions using language and features appropriate to the audience and context • Uses questioning and listening techniques to identify learning needs and obtain feedback
Initiative and	• Recognises and responds to both explicit and implicit organisational procedures and protocols and legislative and regulatory requirements

SKILL	DESCRIPTION
enterprise	• Understands how own role meshes with others and contributes to broader goals
Teamwork	• Selects the appropriate form, channel and mode of communication for a specific purpose relevant to own role • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking a leadership role on occasion • Recognises the importance of building rapport to establish effective working relationships • Applies a range of communication strategies to encourage others to share their knowledge and skills and reflect on the effectiveness of the interaction
Problem solving	• Uses logical processes to plan, implement and monitor learning in the workplace • Systematically gathers and analyses relevant information and evaluates options to make informed decisions
Technology	• Uses digital tools to organise, store, integrate and share relevant information

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to BSBLED501 Develop a workplace learning environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBHRM523 Coordinate the learning and development of teams and individuals

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- coordinate learning and development for at least one team and for at least one individual.

In the course of the above, the candidate must:

- liaise with training and development specialists
- recognise workplace achievement by giving feedback, recognition and rewards
- monitor and recommend improvements for workplace learning
- record and report workplace learning outcomes.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- how management of relationships can achieve a learning environment
- principles and techniques involved in the management and organisation of:
  - adult learning
  - coaching and mentoring
  - consultation and communication
  - improvement strategies
  - leadership
  - learning environment and learning culture
  - monitoring and reviewing workplace learning
  - problem identification and resolution
  - record keeping and management methods
  - structured learning
  - work-based learning.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- relevant organisational policies and procedures
- workplace equipment and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBINS402 Coordinate workplace information systems

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement and review workplace information systems. It involves identification, collection, initial analysis and use of information.

The applies to individuals whose work will normally be carried out within methods and procedures which require planning and evaluation, leadership and guidance of others, and some discretion and judgement.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Information Services

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and review information needs	1.1 Identify information required by relevant stakeholders 1.2 Review information requirements to determine suitability, accessibility, currency and reliability of information according to organisational policies and procedures
2. Collect, analyse and report information	2.1 Collect information which is adequate and relevant to the requirements of relevant stakeholders 2.2 Confirm information is in a format suitable for analysis, interpretation and distribution 2.3 Analyse information, identify and report relevant trends according to the requirements for which it was collected

ELEMENT	PERFORMANCE CRITERIA
3. Implement information systems	3.1 Implement information systems effectively to store, retrieve and regularly review information for decision making purposes 3.2 Use technology available in the work area to manage information effectively 3.3 Recommend improvements to information system to relevant stakeholders
4. Support information system continuous improvement	4.1 Collect data about information system future needs in consultation with relevant stakeholders 4.2 Confirm identified information system future needs reflect the organisation's business plans 4.3 Assist development of proposals for continuous improvement of information system 4.4 Distribute information to relevant stakeholders on information system changes, where required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	• Critically analyses documentation from a variety of sources and consolidates information
Writing	• Develops information for a specific audience using clear and detailed language
Oral Communication	• Uses active listening and questioning to convey and clarify information and to confirm understanding
Numeracy	• Selects from and uses mathematical strategies to perform initial analysis on information
Planning and organising	• Takes responsibility for planning, sequencing and prioritising tasks and own workload for efficiency and effective outcomes
Teamwork	• Cooperates with others and contributes to work practices where joint outcomes are expected and deadlines are to be met
Problem solving	• Contributes to continuous improvement of current work practices by applying basic principles of analytical thinking
Technology	• Uses digital technologies and systems to access, enter, present and distribute information

Unit Mapping Information

Supersedes and is equivalent to BSBINM401 Implement workplace information system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBINS402 Coordinate workplace information systems

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- distribute information to relevant stakeholders in response to three different workplace information needs
- implement and review a workplace information system on at least one occasion.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key aspects of workplace information systems including:
  - budgets and financial management systems
  - customer information software or records
  - databases
  - product and service information
  - project management software
  - record management systems
  - spreadsheets.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a workplace information system
- organisational policies and procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBINS501 Implement information and knowledge management systems

Modification History

Release	Comments
Release 2	This version first released with the Business Services Training Package Version 8.0. Typographical error in Foundation Skills corrected.
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to organise training for an information and knowledge management system and to implement the use of the system.

The unit applies to individuals who are responsible for ensuring relevant information and corporate knowledge are retained, accessible and improve business outcomes.

It applies to information and knowledge management systems that comprise policies, protocols, procedures and practices to manage information or knowledge within the organisation and among relevant stakeholders.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical Skills – Information Services

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Implement use of management system	1.1 Identify legislative requirements, and organisational policies and procedures

ELEMENT	PERFORMANCE CRITERIA
	1.2 Implement information and knowledge management system according to legislative requirements and organisational policies and procedures 1.3 Address implementation issues and problems, where required 1.4 Collect information on relevant key performance indicators 1.5 Identify contingencies and refer technical specialist help, where required
2. Organise learning to use management systems	2.1 Identify learning requirements of relevant stakeholders for use of an information and knowledge management system 2.2 Identify and secure resources required for learning activities to use an information and knowledge management system 2.3 Organise and facilitate learning activities 2.4 Promote and support use of the system throughout the organisation 2.5 Monitor and document effectiveness of learning activities
3. Review use of management system	3.1 Analyse effectiveness of system and report on strengths and limitations of the system 3.2 Recommend improvements to information and knowledge management system, where required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Writing	• Prepares and produces documentation for a specific audience using clear and detailed language to convey explicit information, requirements and recommendations
Oral Communication	• Presents information using structure and language to suit the audience • Uses active listening and questioning and reading of verbal and non-verbal signals to clarify information and to confirm understanding
Self-management	• Takes responsibility for following policies, procedures and legislative requirements and identifies organisational implications of new legislation or regulation
Teamwork	• Collaborates with others, sharing information to build strong work groups and avoid behaviours that are not conducive to a productive environment • Elicits feedback and provides feedback to others in order to improve

Skill	Description
	self or workgroup behaviours
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others and taking into account capabilities, efficiencies and effectiveness • Monitors progress of plans and schedules and reviews and changes them to meet new demands and priorities
Problem solving	• Applies systematic and analytical processes to address problems and make decisions in complex situations
Initiative and enterprise	• Investigates new and innovative ideas to continuously improve, work practices and processes
Technology	• Uses and investigates new digital technologies and applications to manage and manipulate data and communicate effectively with others

Unit Mapping Information

Supersedes and is equivalent to BSBINM501 Manage an information or knowledge management system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBINS501 Implement information and knowledge management systems

Modification History

Release	Comments
Release 2	This version first released with the Business Services Training Package Version 8.0. Typographical error in Foundation Skills corrected.
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- implement and review one information management system
- implement and review one knowledge management system
- facilitate learning on both these information and knowledge management systems.

In the course of the above, the candidate must:

- identify learning needs and plan and implement learning activities to enable personnel to use information and knowledge management system
- monitor performance and address issues and contingencies as they arise including:
  - accessing technical specialists, as required
  - applying correct policies and procedures for the information or knowledge management system
  - evaluating effectiveness of information or knowledge management system for intended outcomes
- recommend improvements to systems, policies and practices, where required.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- relevant legislation, regulation, standards and codes
- organisational policies and procedures, including those related to:
  - information management
  - knowledge management

- organisational operations and existing data and information systems
- relevant learning activities and key performance indicators.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation, regulation, standards and codes relevant to information and knowledge management
- workplace systems, documentation and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBLDR413 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills, knowledge and outcomes required to use leadership to promote team cohesion. It includes motivating, mentoring, coaching and developing the team and forming the bridge between the management of the organisation and team members.

The unit applies to team leaders, supervisors and new or emerging managers where leadership plays a role in developing and maintaining effective workplace relationships. It applies in any industry or community context. At this level work will normally be carried out within routine and non-routine methods and procedures, which require planning, evaluation, leadership and guidance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to lead workplace relationships	1.1 Identify work team objectives according to organisational strategy 1.2 Collect and analyse information for the achievement of work task 1.3 Share ideas and information with relevant internal and external stakeholders according to work task 1.4 Develop strategy for completion of work task in collaboration with work team

ELEMENT	PERFORMANCE CRITERIA
2. Lead workplace relationships	2.1 Identify and implement methods to facilitate collaboration to complete work task 2.2 Support colleagues experiencing difficulties fulfilling work requirements 2.3 Manage conflict constructively within the organisation's processes and parameters of own role 2.4 Communicate work progress to relevant internal and external stakeholders
3. Review leadership	3.1 Seek feedback on relationship management for work task from relevant stakeholders 3.2 Analyse feedback on relationship management 3.3 Evaluate personal performance in leading workplace relationships 3.4 Identify areas of improvement for leading workplace relationships future work tasks

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Collects, analyses and evaluates textual information from a range of resources to inform improvement strategies
Oral Communication	• Selects or adjusts communication style to maintain effectiveness of interaction and build and maintain engagement consistent with organisational requirements
Initiative and enterprise	• Identifies and follows legislative and organisational requirements relevant to own role
Teamwork	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Adapts personal communication style to build trust and positive working relationships and to show respect for the opinions, values and particular needs of others • Plays a lead role in situations requiring effective collaboration, demonstrating conflict resolution skills and ability to engage and motivate others
Planning and	• Plans and implements activities and processes to manage and review work performance

organising	• Systematically gathers and analyses all relevant information to formulate and evaluate possible solutions to difficulties

Unit Mapping Information

Supersedes and is equivalent to BSBLDR402 Lead effective workplace relationships.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBLDR413 Lead effective workplace relationships

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- lead effective workplace relationships on at least four occasions with different individuals or groups.

In the course of the above, the candidate must:

- access and analyse information required to achieve planned outcomes
- collaborate with work team to develop and implement a work task strategy
- apply techniques for resolving problems and conflicts, and dealing with poor performance according to organisational and legislative requirements
- monitor and communicate work progress to relevant internal and external stakeholders
- seek and review feedback to improve workplace leadership.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- considerations for communicating information including audience cultural and social diversity
- consultation processes including internal and external sources of consultees
- impacts of relationships, cultural and social environment, in supporting or hindering the achievement of planned outcomes
- techniques for developing positive work relationships and building trust and confidence in a team, including:
  - interpersonal styles
  - communications
  - consultation
  - cultural and social sensitivity
  - networking

- impact of legislation and organisational policies on workplace relationships
- techniques for communicating information and ideas to a range of stakeholders
- common methods to resolve workplace conflict
- common methods to manage poor work performance
- common methods to monitor, analyse and improve work relationships.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation, regulations, standards and codes relevant to performance evidence
- workplace documentation and resources
- interaction with others.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBLDR414 Lead team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills, knowledge and outcomes required to lead the performance of a team and to develop team cohesion.

The unit applies team leaders, supervisors and new emerging managers who have an important leadership role in the development of efficient and effective work teams. Leaders at this level also provide leadership for the team and bridge the gap between the management of the organisation and the team members. As such they must 'manage up' as well as manage their team/s.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan team outcomes	1.1 Lead team to identify and establish team objectives and work processes 1.2 Support team to document identified objectives and work processes according to organisational processes 1.3 Encourage team members to incorporate innovation and productivity measures in work plans 1.4 Lead and support team members to meet expected outcomes
2. Promote team cohesion	2.1 Provide opportunities for input of team members into planning, decision making and operational aspects of work team

ELEMENT	PERFORMANCE CRITERIA
	2.2 Support team members to take responsibility for own work and to assist each other in undertaking required roles and responsibilities 2.3 Provide feedback to team members on their efforts and contributions 2.4 Address or refer issues, concerns and problems identified by team members 2.5 Model expected behaviours and approaches
3. Supervise team performance	3.1 Encourage team members to participate in and take responsibility for team activities and communication processes 3.2 Support team to identify and resolve problems which impede performance 3.3 Ensure own contribution to work team serves as a role model for others
4. Liaise with management	4.1 Establish open communication with line management 4.2 Communicate information from line management to the team 4.3 Communicate unresolved issues, concerns and problems raised by the team to line management to action 4.4 Communicate issues raised by management to the team to action

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Writing	• Prepares workplace plans that communicate intent and elicits feedback clearly and effectively
Oral communication	• Engages in discussions or provides information using structure and language appropriate to the audience and situation
Teamwork	• Selects and uses appropriate conventions and protocols when communicating with team members • Adapts personal communication style to model required behaviours, build trust and positive working relationships and to show respect for the opinions and values of others • Plays a lead role in situations requiring effective collaboration, demonstrating conflict resolution skills and ability to engage and motivate others

Planning and organising	• Develops, implements and monitors plans and processes to ensure team engagement and effectiveness • Uses formal analytical thinking techniques to identify issues and generate possible solutions, seeking input from others, as required

Unit Mapping Information

Supersedes and is equivalent to BSBLDR403 Lead team effectiveness.

Supersedes but is not equivalent to BSBSMB407 Manage a small team.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBLDR414 Lead team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop a team development plan, that addresses:
  - innovation and productivity measures
  - team cohesion
  - issues management and actions.

In the course of the above, the candidate must:

- apply knowledge of organisational goals, objectives and plans to work tasks
- communicate with team members and management to identify and establish team purpose, roles, responsibilities, goals plans and objectives and resolve problems
- consult, encourage, support and provide feedback to team members
- model team leadership behaviours and approaches.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- work processes, including team purpose, roles, responsibilities, goals and plans
- organisational escalation policies and procedures
- behaviours which enhance organisational image for work team, clients and customers
- processes for setting goals that contribute to team effectiveness
- effects of individual behaviour on team effectiveness
- innovation and productivity measures in work plans
- key features of common leadership styles.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- information about the organisation, including organisational structure, goals, objectives and plans.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBLDR522 Manage people performance

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.
Release 2	This version first released with BSB Business Services Training Package Version 7.1. Release created to amend typographical error with performance criteria.

Application

This unit describes the skills and knowledge required to manage the performance of staff that are direct reports.

The unit applies to individuals who manage people. It covers work allocation and the methods to review performance, reward excellence and provide feedback. The unit makes the link between performance management and performance development and reinforces both functions as a key requirement for effective managers.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Leadership

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Allocate work	1.1 Consult relevant groups and individuals on work to be allocated and resources available 1.2 Develop work plans and allocate work according to organisational requirements and operational plans 1.3 Develop and confirm performance standards and key

ELEMENT	PERFORMANCE CRITERIA
	performance indicators with relevant staff 1.4 Conduct risk analysis according to organisational risk management plan and legal requirements
2. Assess performance	2.1 Review performance management and processes according to legislation, organisational objectives and policies 2.2 Train participants in the performance management and review process 2.3 Conduct performance management according to organisational policies procedures and relevant timelines 2.4 Monitor and evaluate performance according to performance standards and key performance indicators
3. Provide feedback	3.1 Provide informal feedback and coaching to staff 3.2 Advise relevant personnel, where performance is poor and take necessary actions 3.3 Document feedback according to the organisational performance management system 3.4 Conduct formal structured feedback sessions as necessary and according to organisational policy
4. Manage follow up	4.1 Develop performance improvement and development plans according to organisational policies 4.2 Monitor underperforming individuals according to organisational policies 4.3 Respond to underperforming individuals, as required 4.4 Reinforce excellence in performance through recognition and continuous feedback

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Learning	• Consolidates and improves own knowledge and skills by coaching, mentoring or training others
Reading	• Gathers, interprets and analyses texts in organisational documents to facilitate performance management
Writing	• Plans and prepares documents for allocating work and managing performance suitable for the target audience and in accordance with organisational requirements

Oral Communication	• Uses language and structure appropriate to context and audience to explain expected standards of performance, provide feedback and coach staff
Self-management	• Applies legal and regulatory responsibilities related to own work and the organisation as a whole • Adheres to organisational policies and procedures
Teamwork	• Applies the protocols governing what to communicate to whom and how in a range of work contexts • Collaborates with others to achieve joint outcomes, influencing direction and taking a leadership role on occasion
Planning and organising	• Sequences and schedules complex activities, monitors implementation and manages relevant communication • Seeks advice, feedback and support, as required to assist in the decision-making process • Uses experiences to reflect on the ways in which variables impact on performance

Unit Mapping Information

Supersedes and is equivalent to BSBMGT502 Manage people performance.

Supersedes but is not equivalent to:

- BSBMGT404 Lead and facilitate off-site staff
- BSBSLS502 Lead and manage a sales team.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBLDR522 Manage people performance

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage performance of at least two individuals
- manage performance of at least one team.

In the course of the above, the candidate must:

- consult with stakeholders to identify work requirements, performance standards and agreed performance indicators
- develop work plans and allocate work to achieve outcomes efficiently and within organisational and legal requirements
- assess performance against performance indicators according to performance management and review processes
- monitor, evaluate and provide feedback on performance and provide coaching or training, as needed
- keep records and documentation in accordance with the organisational performance management system
- reinforce excellence in performance through recognition and continuous feedback
- respond to underperforming individuals according to organisational policies, as required.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative and regulatory and organisational requirements for performance management and review
- organisational risk management plan
- organisational human resource support services
- organisational performance measurement systems
- key features of unlawful dismissal rules and due process

- staff development options and information.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation on performance management
- workplace documentation and resources for performance management and review.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBOPS402 Coordinate business operational plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement operational plans by planning and acquiring resources, monitoring and adjusting operational performance and providing reports on performance, as required.

The unit applies to individuals who plan activities to achieve team and organisational objectives. At this level, work will normally be carried out within routine and non-routine methods and involve procedures that require planning, evaluation, leadership and guidance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to implement operational plan	1.1 Consult with stakeholders to identify resource requirements relevant to operational plan 1.2 Collate, analyse and document details of resource requirements 1.3 Develop operational plan and determine implementation method 1.4 Plan for contingencies 1.5 Develop and present proposals for resource requirements
2. Implement operational plan	2.1 Assist in recruiting and onboarding employees required to implement operational plan according to organisational policies

ELEMENT	PERFORMANCE CRITERIA
	and procedures 2.2 Acquire physical resources and services according to organisational policies and procedures 2.3 Support efficient, cost-effective and safe use of resources 2.4 Adjust implementation of the operational plan in consultation with others to manage contingencies
3. Monitor operational performance	3.1 Collate relevant information and determine operational and productivity performance 3.2 Identify and use key performance indicators (KPIs) and assess operational performance 3.3 Identify unsatisfactory performance and take action to rectify the situation according to organisational policies
4. Review operations based on performance	4.1 Develop recommendations for variation to operational plans 4.2 Present recommendations to the designated persons or groups to gain approval 4.3 Maintain records related to operational performance according to organisational policies and procedures 4.4 Report information on operational performance to management

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	• Identifies, interprets, analyses and reviews textual information related to the operational plan and monitoring of operational performance
Writing	• Communicates relationships between ideas and information, matching style of writing to purpose and audience • Researches, plans and prepares workplace documentation for relevant stakeholders using organisational formats
Oral communication	• Participates in a variety of spoken exchanges with a range of audiences varying structure and language to suit the audience
Numeracy	• Selects and uses familiar mathematical techniques to organise timely supply of adequate resources for the operational plan and to use budgetary information to monitor performance
Enterprise and initiative	• Monitors adherence to organisational policies and procedures and considers own role in terms of its contribution to broader goals of the work environment

Skill	Description
Teamwork	• Selects and uses appropriate conventions and protocols when communicating with diverse individuals to build rapport, seek or present information • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group communication, influencing direction and taking a leadership role on occasion
Planning and organising	• Takes responsibility for planning, organising, implementing and monitoring tasks required to achieve required outcomes • Evaluates effectiveness of decisions in terms of how well they met stated goals • Identifies and addresses an increasing range of familiar problems by implementing contingency plans

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to:

- BSBFLM305 Support operational plan
- BSBMGT402 Implement operational plan.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBOPS402 Coordinate business operational plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- prepare, implement and review two operational plans.

In the course of the above, the candidate must:

- interact with a range of people and groups to identify resource requirements, performance objectives, systems, procedures and records relating to the operational plan
- plan and acquire physical and human resources using organisation's systems and procedures
- manage and support personnel to achieve performance objectives including facilitating new employee onboarding
- present information and recommendations to support implementation and variation of the operational plan
- monitor operational performance against the performance objectives and budgets and implement improvements to rectify unsatisfactory performance
- vary the operational plan and gain approval to deal with contingencies
- document and provide reports on performance as required by the organisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- processes to identify resource requirements
- sources of information to identify resource requirements
- methods to manage contingencies including through consultation with relevant stakeholders
- key features of performance monitoring systems and processes
- common methods for problem solving
- methods to support staff including mentoring, coaching and supervision

- implementation methods for operational plan
- budget and other financial information related to the organisation
- organisational objectives including costs, identified shortfalls and surpluses.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- organisational operational plans, policies and procedures relevant to performance evidence
- workplace documentation and resources including budgets
- physical and human resource procurement documentation
- employee onboarding and performance monitoring procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBOPS502 Manage business operational plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to develop and monitor the implementation of operational plans to support efficient and effective workplace practices and organisational productivity and profitability.

The unit applies to individuals who manage the work of others and operate within the parameters of a broader strategic and/or business plans.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish operational plan	1.1 Research, analyse and document resource requirements 1.2 Develop operational plan in consultation with, and with approval from, relevant stakeholders 1.3 Develop contingencies for operational plan 1.4 Explain plan to relevant work teams
2. Manage resource acquisition	2.1 Confirm that employees are recruited and inducted according to the organisation's human resources management policies, practices and procedures 2.2 Confirm that physical resources and services are acquired according to the organisation's policies, practices and procedures

ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify and incorporate requirements for intellectual property rights and responsibilities related to acquisition of resources
3. Monitor and review operational performance	3.1 Assess progress of operational plan in achieving profit and productivity plans and targets 3.2 Identify areas of under-performance, recommend solutions and rectify the situation 3.3 Plan and implement relevant processes for ongoing monitoring and confirm that support is provided for individuals and teams 3.4 Negotiate recommendations for variations to operational plans and gain approval from designated persons

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	• Gathers, interprets and analyses workplace documentation to determine requirements for the operational plan
Writing	• Develops and documents a range of detailed texts relating to the management of an operational plan according to organisational requirements
Oral communication	• Presents information to a range of audiences using appropriate register, vocabulary and paralinguistic features • Listens and comprehends information from a variety of spoken exchanges with clients, co-workers and other stakeholders
Numeracy	• Selects and uses mathematical problem-solving strategies to organise resource requirements, performance benchmarks and financial viability of the operational plan
Enterprise and initiative	• Monitors adherence to organisational policies, procedures and considers own role in terms of its contribution to broader goals of the work environment
Teamwork	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction, influencing direction and taking a leadership role on occasion
Planning and organising	• Takes responsibility for developing and implementing systems and processes to achieve organisational objectives, seeking advice, feedback and support as required to assist in the development and planning phase • Sequences and schedules complex activities, monitors

Skill	Description
	implementation, and manages relevant communication
Problem solving	• Uses systematic analytical processes to aid decision making, identify potential problems and generate contingency plans or solutions
Technology	• Demonstrates awareness of the importance of data security in a digital environment

Unit Mapping Information

Supersedes and is equivalent to BSBMGT517 Manage operational plan.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBOPS502 Manage business operational plans

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage an operational plan for at least one business or work area.

In the course of the above, the candidate must:

- develop and implement an operational plan using a variety of information sources and consultation including:
  - resource requirements
  - key performance indicators
  - monitoring processes
  - contingency plans
- communicate with stakeholders to explain the plan and supporting information, seek approvals, negotiate variations and engage work teams
- confirm existence of relevant strategies, including strategies relating to:
  - recruiting, inducting and developing personnel
  - acquiring physical resources and services
  - protecting intellectual property
  - making variations to the plan
  - monitoring and documenting performance.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- stakeholders involved in development and management of operations plan including escalation points, colleagues and specialist resource managers
- key information sources for proposal development and presentation including resource requirement specialists

- consultation processes
- content of operational plans, including:
  - procurement processes
  - employee recruitment and induction strategies
  - physical resource and service acquisition strategies
  - key indicators of organisational performance
- budget and actual financial relating to profit and productivity
- methods for preparing operational plans and contingency plans
- role of an operational plan in achieving an organisation's objectives
- procedures and records associated with documenting performance
- approaches for developing key performance indicators to meet business objectives
- legislative and regulatory framework relating to the development and implementation of operational plan of the organisation, including:
  - fair trading laws
  - work health and safety
- organisational policies, practices and procedures that relate to the operational plan.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation and regulations relevant to operational plans
- workplace documentation and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBOPS505 Manage organisational customer service

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to develop strategies to manage organisational systems that ensure products and services are delivered and maintained to standards agreed by the organisation.

The unit applies to individuals who supervise customer service provided by others within an organisation. At this level, individuals must exercise considerable discretion and judgement, using a range of problem solving and decision making strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Business Operations

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish customer requirements	1.1 Consult with customers to identify customer service requirements 1.2 Integrate customer feedback into organisation's business plan 1.3 Identify and procure resources required to address customer service requirements
2. Deliver quality products and services	2.1 Deliver product and service according to customer specifications within organisation's business plan 2.2 Monitor team performance and assess against the organisation's quality and delivery standards 2.3 Support colleagues to overcome difficulties in meeting

ELEMENT	PERFORMANCE CRITERIA
	customer service standards
3. Evaluate customer service	3.1 Develop and use strategies for monitoring progress against product and service targets and standards 3.2 Develop and use strategies for obtaining customer feedback on provision of product and service 3.3 Adapt delivery of customer product and service in consultation with relevant individuals and groups 3.4 Manage records, reports and recommendations within the organisation's systems and processes

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Description
Reading	• Interprets and analyses textual information from a variety of sources and applies the knowledge that has been gained to evaluate standards for organisation's products and services
Writing	• Produces a range of text types to convey information, requirements or recommendations matching style of writing to purpose and audience
Oral communication	• Clearly articulates systems and standards in a team environment using language suitable to diverse audiences • Uses listening and questioning techniques to obtain feedback and confirm understanding
Numeracy	• Interprets and comprehends mathematical information in organisation's business and customer service plans
Planning and organising	• Recognises and applies organisational protocols and meets expectations associated with own work
Teamwork	• Identifies and uses appropriate conventions and protocols when communicating with colleagues and customers • Collaborates with others, taking into account their strengths and experience, to achieve desired outcomes • Provides support in field of expertise to team
Enterprise and initiative	• Develops and implements plans using logical processes and monitors and evaluates progress against stated goals
Problem solving	• Accepts responsibility for addressing complex or non-routine difficulties, applying problem solving processes in determining a

Skill	Description
	solution
Technology	• Uses digital technology to access, organise and present information in a format that meets requirements

Unit Mapping Information

Supersedes and is equivalent to BSBCUS501 Manage quality customer service.

Supersedes but is not equivalent to:

- BSBCUE504 Integrate customer engagement within the organisation
- BSBCUE601 Optimise customer engagement operations
- BSBCUE602 Manage customer engagement information
- BSBCUE603 Design and launch new customer engagement facilities
- BSBSLS501 Develop a sales plan.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBOPS505 Manage organisational customer service

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and review strategy for delivering and monitoring quality customer service for an organisation or work area.

In the course of the above, the candidate must:

- implement quality customer service policies and procedures
- identify and resolve system problems relating to poor customer service
- assist teams to meet customer service requirements
- develop, procure and use human and physical resources to support quality customer service delivery.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- legislative and regulatory frameworks governing customer service
- elements of effective customer service including quality, time and cost
- organisational policies and procedures for customer service and handling customer complaints
- relevant service standards and best practice models
- key principles of public relations and product promotion
- common techniques for solving complaints
- principles and techniques involved in managing:
  - customer behaviour
  - specific customer needs
  - customer research
  - customer relations

  - ongoing product and service quality
  - problem identification and resolution
  - quality customer service delivery
  - record keeping and management methods
- strategies for monitoring, managing and introducing ways to improve customer service relationships
- strategies to obtain customer feedback.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- legislation, regulations and codes of practice related to customer service
- workplace documentation and resources
- complex customer complaints.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBPEF501 Manage personal and professional development

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement systems and process that support the personal and professional development of self and others.

The unit applies to individuals working in a range of managerial positions who are accountable for the development and performance of others.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking & Problem Solving – Personal Effectiveness

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Manage work goal development	1.1 Document team member responsibilities and identify organisational framework for development of work goals 1.2 Support others to develop work goals, plans and activities that align with their responsibilities 1.3 Assess others' work goals, plans and activities for alignment with organisational goals and provide feedback to team members 1.4 Facilitate access to personal and professional development opportunities that align to team member goals, plans and activities
2. Facilitate achievement of work priorities	2.1 Assess and prioritise personal, team and organisational demands 2.2 Use technology to manage work priorities of the team

ELEMENT	PERFORMANCE CRITERIA
	2.3 Identify and implement techniques to manage team health and wellbeing in the workplace
3. Develop and maintain professional competence	3.1 Document own development needs, priorities and plans using applicable competency standards, where required 3.2 Seek feedback from relevant personnel on own development needs 3.3 Participate in personal and professional development activities that address identified needs, priorities and plans

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Learning	• Investigates and uses a range of strategies to develop personal competence
Reading	• Analyses and interprets textual information from organisational policies and practices or feedback to inform personal development planning
Writing	• Uses feedback to prepare reports that summarise ways to improve competence
Oral communication	• Uses active listening and questioning to seek and receive feedback
Enterprise and Initiative	• Identifies how own role contributes to broader organisational goals • Considers organisational protocols when planning career development of self and others
Teamwork	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Uses interpersonal skills to establish and build positive working relationships with others
Planning and organising	• Plans and prioritises tasks in order to meet deadlines, manage role responsibilities and to manage own personal welfare • Identifies and uses appropriate technology to improve work efficiency
Technology	• Uses technology to manage and prioritise work tasks

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to:

- BSBLED503 Maintain and enhance professional practice
- BSBWOR501 Manage personal work priorities and professional development.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBPEF501 Manage personal and professional development

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and implement a plan for own personal and professional development
- manage personal and professional development of at least two other individuals.

In the course of the above, the candidate must:

- identify roles and responsibilities of team members
- support two different individuals to develop work goals that align with their role and responsibilities
- facilitate team member access to relevant personal and professional development activities
- use technology to organise and prioritise tasks and commitments of a team or work area
- research and implement techniques for maintaining health and wellbeing of self and others
- develop personal work goals, plans and activities to meet work goals
- measure personal work performance, including assessing competency against competency standards
- participate in personal and professional development activities to develop professional competence.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- roles and responsibilities of team members
- principles and techniques involved in the management or organisation of:
  - performance measurement
  - personal behaviour, self-awareness and personality traits identification
  - personal development plans
  - personal goal setting

- task prioritisation
- common personal and professional development activities relevant to the industry
- technology to plan and prioritise work tasks
- techniques to manage health and wellbeing in the workplace
- organisation's human resources policies and procedures relevant to professional development.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to challenges and situations to demonstrate the application of performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBSTR402 Implement continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to implement continuous improvement of systems and processes of an organisation. It includes using systems and strategies to encourage the team to participate in the process, monitoring and reviewing performance, and identifying opportunities for further improvements.

The unit applies to managers who are responsible for implementing the continuous improvement process to achieve the objectives of the organisation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Identify and plan for improvement	1.1 Identify relevant stakeholders and establish improvements required 1.2 Identify where new systems and processes could be implemented 1.3 Promote team involvement in decision making processes for team systems and processes 1.4 Communicate and agree on new improvement systems and processes with relevant stakeholders 1.5 Manage reports and recommendations for using systems and processes of the organisation

ELEMENT	PERFORMANCE CRITERIA
	1.6 Establish risk review processes
2. Monitor implementation of continuous improvement	2.1 Use workplace systems and technology, and monitor team performance according to organisational policies and procedures 2.2 Implement new systems and processes in consultation with relevant stakeholders 2.3 Maintain new system and processes in consultation with relevant stakeholders 2.4 Identify and resolve system and process issues
3. Evaluate implementation of continuous improvement	3.1 Communicate productivity improvements to relevant stakeholders and confirm their understanding 3.2 Seek and respond to feedback from relevant stakeholders on proposed improvement systems and process 3.3 Review improvement systems and process, and make changes, as required

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Evaluates and integrates facts and ideas to construct meaning from a range of text types in order to implement continuous improvement systems and processes
Writing	• Selects vocabulary, grammatical structures and conventions appropriate to text • Researches, plans and prepares continuous improvement documentation for required stakeholders
Oral communication	• Participates in a variety of spoken exchanges with a range of audiences using structure and language to suit the audience
Initiative and enterprise	• Monitors adherence to organisational policies and procedures and considers own role in terms of its contribution to broader goals of the work environment • Recognises the potential of new approaches to enhance work practices and outcomes • Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering required information and identifying and evaluating options against agreed criteria

SKILL	DESCRIPTION
Teamwork	• Selects and uses required conventions and protocols when communicating with diverse individuals to seek and share information • Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group communication, influencing direction and taking a leadership role on occasion
Self-management	• Evaluates effectiveness of decisions in terms of how well they meet stated goals
Technology	• Uses digital applications to access and filter data, extract, organise, integrate and share required information
Planning and organising	• Takes responsibility for planning and organising own workload to achieve required outcomes

Unit Mapping Information

Supersedes and is equivalent to BSBMGT403 Implement continuous improvement.

Supersedes but is not equivalent to:

- BSBCON401 Work effectively in a business continuity context
- BSBMGT406 Plan and monitor continuous improvement.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBSTR402 Implement continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- implement at least one continuous improvement system or process in an organisation or work area.

In the course of the above, the candidate must:

- provide support to enable individuals and teams to participate in decisions, take responsibility, show initiative and implement improvement processes
- communicate effectively to support the implementation of improvements and improvement system and processes
- implement, monitor and update improvement plans, processes and procedures to improve performance
- document performance to identify further opportunities for improvement
- manage records and reports in the systems and procedures of the organisation.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- continuous improvement systems and processes
- coaching and mentoring needs to support continuous improvement
- change management techniques that support continuous improvement and initiative
- organisation's systems and data used for benchmarking and monitoring performance for continuous improvement.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documentation and resources relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBSTR501 Establish innovative work environments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to create an environment that enables and supports practice which focuses on a holistic approach to the integration of innovation across all areas of work practice.

The unit applies to individuals working in leadership or management roles in any industry or community context. The individual could be employed by the organisation, but may also be an external contractor, the leader of a cross organisation team or of a self-formed team of individuals.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Establish work practices	1.1 Identify relevant stakeholders 1.2 Identify organisational objectives and practices 1.3 Evaluate current work conditions 1.4 Determine working conditions that allow innovative practices according to organisational policies and procedures 1.5 Identify organisational resources relating to innovation 1.6 Build and lead team and maximise opportunities for innovation
2. Create an innovative	2.1 Evaluate the impacts of changing work environment

ELEMENT	PERFORMANCE CRITERIA
environment	2.2 Collaborate with stakeholders and develop ideas for enhancing work environment 2.3 Identify and select resources required for enhancing work environment 2.4 Assess the ability of the workspace to support innovation 2.5 Assist team members to adapt and perform in new work environment
3. Implement innovative work environment	3.1 Encourage creative mindsets, collaborative working and development of positive workplace relationships 3.2 Reinforce the value of innovation according to organisational vision and objectives 3.3 Take risks to open up opportunities for innovation 3.4 Select ways of celebrating and encouraging innovation 3.5 Encourage and support evaluation of innovative ideas
4. Share and evaluate innovative ideas and work environment	4.1 Share relevant information, knowledge and skills on innovative practices with stakeholders 4.2 Provide and encourage formal and informal learning opportunities to develop skills required for innovation 4.3 Create opportunities where individuals can learn from the experience of others 4.4 Seek and respond to suggestions, improvements and innovations from all team members

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Interprets and evaluates information that may deal with complex ideas related to issues both within and outside a given workplace context
Writing	• Develops information for others using language to suit the context and audience
Oral communication	• Presents ideas and concepts to a range of audiences using structure and language to suit the audience • Uses active listening and questioning to discuss and clarify information and to confirm understanding
Self-management	• Takes responsibility for implementing practices and procedures to achieve organisational objectives in innovation according to role

SKILL	DESCRIPTION
	requirements • Accepts responsibility for planning and implementing tasks and practices to achieve organisational goals, negotiating key aspects with others and taking into account current capabilities and needs
Initiative and enterprise	• Develops new and innovative ideas through exploration, evaluation, analysis and critical thinking
Teamwork	• Uses required communication techniques to build rapport and foster strong relationships with co-workers in a range of work contexts • Uses inclusive and collaborative techniques to share, promote and convey complex information about new ideas and systems within the workplace • Facilitates a climate where people feel comfortable suggesting and discussing improvements and new ideas
Problem Solving	• Uses problem solving processes to identify, assess and respond to challenges and risks around innovation

Unit Mapping Information

No equivalent unit. Supersedes but is not equivalent to:

- BSBINN501 Establish systems that support innovation
- BSBINN502 Build and sustain an innovative work environment.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBSTR501 Establish innovative work environments

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- establish at least two different procedures and practices that foster innovation in areas of work practice, including at least three of the following:
  - collaborative work arrangements
  - building team capacity to contribute to innovation
  - providing formal and informal learning opportunities
  - evaluating ideas of innovation in work environment
  - celebrating and encouraging innovation
  - consulting with relevant stakeholders
  - changing physical work environment, including designing, fitting-out and decorating workspaces
  - communicating and sharing of ideas and feedback.

In the course of the above, the candidate must:

- reinforce the value of innovation to the vision and objectives of the organisation
- model behaviour, including:
  - being receptive to ideas
  - giving constructive advice
  - establishing and maintaining relationships based on mutual respect and trust
  - taking considered risks that provide opportunities for innovation
- support innovation and collaboration of ideas to make improvements.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- concepts and theories of innovation

- context for innovation in the workplace, including:
  - core business values
  - overall objectives
  - broader environmental context
  - value and benefit of innovative ideas and projects
- factors and tools that motivate individuals
- creative thinking and innovative work practices
- ways of celebrating and promoting innovation in the workplace
- approaches to management and leadership and how they support and hinder innovation
- challenges and barriers to innovation and ways of overcoming them, including:
  - rewarding and celebrating innovation
  - coaching and learning
  - modelling behaviour and managing the physical environment.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- relevant legislation and codes of practice
- relevant organisational policies and procedures
- workplace equipment and resources.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBSTR502 Facilitate continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to lead and manage continuous improvement systems and processes. Particular emphasis is on the development of systems and the analysis of information to monitor and adjust performance strategies, and to manage opportunities for further improvements.

The unit applies to individuals who take an active role in managing a continuous improvement process in order to achieve an organisation's objectives. At this level, work will normally be carried out using complex and diverse methods and procedures which require the exercise of considerable discretion and judgement, using a range of problem-solving and decision-making strategies.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Critical Thinking and Problem Solving – Business Strategy

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish systems and processes	1.1 Identify current systems and processes that facilitate continuous improvement 1.2 Identify and define improvement needs and opportunities for the organisation 1.3 Develop decision-making processes to assist continuous improvement and communicate to relevant stakeholders 1.4 Develop strategies for continuous improvement and encourage

ELEMENT	PERFORMANCE CRITERIA
	team members to participate in decision-making processes 1.5 Develop knowledge management systems to capture team progress, insights and experiences from business activities 1.6 Develop new systems and processes that facilitate continuous improvement according to improvement needs and opportunities 1.7 Establish processes that confirm team members are informed about continuous improvement outcomes
2. Monitor and adjust performance strategies	2.1 Confirm relevant systems and processes meet organisation sustainability requirements 2.2 Confirm team progress, insights and experiences are captured and accessible using knowledge management systems 2.3 Coach individuals and teams to implement and support continuous improvement systems and processes 2.4 Identify and evaluate ways in which planning and operations could be improved 2.5 Make recommendations and communicate strategies to relevant stakeholders
3. Manage opportunities for further improvement	3.1 Evaluate outcomes and identify opportunities for improvement 3.2 Seek feedback from relevant stakeholders on systems and processes 3.3 Identify other areas for improvement and document feedback for future planning

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Reading	• Identifies and extracts required information from a range of complex texts • Locates, interprets and analyses workplace documentation to gather information relating to continuous improvement
Writing	• Develops complex texts related to continuous improvement processes according to organisational requirements • Ensures the vocabulary, grammatical structures and conventions are required for the context and target audience
Oral	• Presents information to a range of audiences using appropriate structure and language

SKILL	DESCRIPTION
communication	• Listens and comprehends information from a variety of spoken exchanges with clients, co-workers and other stakeholders • Confirms understanding through questioning and active listening
Initiative and enterprise	• Monitors adherence to organisational policies, procedures and protocols and considers own role in terms of its contribution to broader goals of the work environment • Identifies and uses appropriate conventions and protocols when communicating with colleagues and external stakeholders
Problem solving	• Uses analytical and lateral thinking to review current practices and develop ideas for improvement
Teamwork	• Collaborates with others to achieve joint outcomes, playing an active role in facilitating effective group interaction and influencing direction
Self-management	• Takes responsibility for developing, implementing and monitoring systems and processes to achieve organisational outcomes
Technology	• Reflects on the ways in which digital systems and tools are used, or could be used, to achieve work goals

Unit Mapping Information

Supersedes and is equivalent to BSBMGT516 Facilitate continuous improvement.

Supersedes but is not equivalent to BSBCUE501 Develop business continuity strategy.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBSTR502 Facilitate continuous improvement

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- lead and manage continuous improvement systems and processes for at least one organisation or work area.

In the course of the above, the candidate must:

- address organisational sustainability requirements
- incorporate mentoring, coaching and other support to enable individuals to participate in continuous improvement processes
- capture progress, insights and experiences using established knowledge management systems
- encourage participation in decision making processes and ideas for continuous improvement.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- systems and processes facilitating continuous improvement
- common decision-making processes
- organisational policies and procedures relating to digital systems, decision-making processes and continuous improvement systems
- business systems and requirements, including:
  - knowledge management
  - quality
  - sustainability
  - performance management.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documentation and resources relevant to performance evidence
- organisational policies and procedures relevant to performance evidence.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBSUS511 Develop workplace policies and procedures for sustainability

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to develop and implement workplace sustainability policies and to modify the policy to suit changed circumstances.

The unit applies to individuals with managerial responsibilities who undertake work developing approaches to create, monitor and improve strategies and policies within workplaces. These individuals also engage with a range of relevant stakeholders and specialists.

'Sustainability' in this unit refers to a broad approach that focuses on the minimisation of an organisation's social, economic and environmental impact, as well as proactive value creation in these areas.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Business Competence – Sustainability

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare workplace sustainability policies	1.1 Establish scope and objectives of workplace sustainability policies 1.2 Gather information for development of sustainability policies 1.3 Analyse information and consultation insights 1.4 Develop and document sustainability policies according to organisational processes

ELEMENT	PERFORMANCE CRITERIA
	1.5 Incorporate implementation and continuous improvement processes into sustainability policies
2. Implement workplace sustainability policies	2.1 Present workplace sustainability policies and implementation processes to key stakeholders 2.2 Identify and source resources required to implement sustainability policies 2.3 Support implementation of workplace sustainability policies 2.4 Track continuous improvements in sustainability approaches using recording systems
3. Review implementation of workplace sustainability policies	3.1 Document outcomes and provide feedback to key personnel and stakeholders 3.2 Identify trends requiring remedial action to promote continuous improvement of performance 3.3 Modify sustainability policies to incorporate improvements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Numeracy	• Interprets and uses mathematical equations to calculate numerical information relating to time durations and costs
Oral communication	• Presents information and seeks advice using language appropriate to audience • Participates in discussions using listening and questioning to elicit the views of others and to clarify or confirm understanding
Reading	• Identifies, analyses and evaluates complex textual information to determine legislative and regulatory requirements, trends and outcomes
Writing	• Researches, plans and prepares documentation using format and language appropriate to context, organisational requirements and audience
Initiative and enterprise	• Develops, monitors and modifies organisational policies and procedures according to legislative requirements and organisation goals
Teamwork	• Selects and uses appropriate conventions and protocols when communicating with internal and external stakeholders to seek or share information • Plays a lead role in consulting and negotiating positive outcomes with

Skill	Description
	a range of stakeholders
Planning and organising	• Plans, organises and implements work activities of self and others that ensure compliance with organisational policies and procedures, and legislative requirements • Sequences and schedules complex activities, monitors implementation, and manages relevant communication • Uses systematic, analytical processes in relatively complex, situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria • Evaluates outcomes of decisions to identify opportunities for improvement

Unit Mapping Information

Supersedes and is equivalent to BSBSUS501 Develop workplace policy and procedures for sustainability.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBSUS511 Develop workplace policies and procedures for sustainability

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- develop and implement workplace policies and procedures for sustainability on at least one occasion, including:
  - implementing sustainability policy and procedures into wider organisational policies and procedures
  - consulting and communicating with relevant stakeholders to generate engagement with sustainability policy development, implementation and continuous improvement.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- Australian and international standards relating to corporate sustainability
- environmental and sustainability legislation, regulations and codes of practice applicable to organisation
- internal and external sources of information and their use in planning and developing organisational sustainability policies and procedures
- elements required for the development of organisational sustainability policies and processes including:
  - agreed outcomes of the policy and procedures
  - policy timeframes and costs
  - performance indicators
  - activities to be undertaken
  - assigned responsibilities
  - record keeping, review and improvement processes
  - common sustainability issues with organisational systems and procedures

- typical barriers to implementing policies and procedures in an organisation and possible strategies to address them.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- corporate sustainability legislation, regulations, standards and codes
- organisational documentation on sustainability and sustainable practices.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

BSBTWK502 Manage team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to lead teams in the workplace and to actively engage with the management of the organisation.

The unit applies to individuals working at a managerial level who lead and build a positive culture within their work teams. At this level, work will normally be carried out using complex and diverse methods and procedures requiring the exercise of considerable discretion and judgement. It will also involve using a range of problem solving and decision-making strategies.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Social Competence – Teamwork and Relationships

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Establish team performance plan	1.1 Identify team purpose, roles, and responsibilities according to organisational and task objectives 1.2 Develop performance plans with expected outcomes, key performance indicators (KPIs) and goals for work team 1.3 Support team members in meeting expected performance outcomes
2. Develop and facilitate team cohesion	2.1 Develop strategies for facilitating team member input into planning, decision making and operational aspects of team tasks 2.2 Develop or modify policies and procedures for promoting team

ELEMENT	PERFORMANCE CRITERIA
	member accountability for personal work and team tasks 2.3 Provide feedback to team members on team effort and contributions 2.4 Develop processes for identifying and addressing issues, concerns and problems identified by team members
3. Facilitate teamwork	3.1 Encourage team members to participate in and to take responsibility for team activities 3.2 Support the team in identifying and resolving work performance problems 3.3 Promote work team collaboration through individual behaviour
4. Liaise with stakeholders	4.1 Establish and maintain open communication processes with relevant stakeholders 4.2 Communicate information from line management to the team 4.3 Communicate and follow-up unresolved issues, concerns and problems raised by team members with line management 4.4 Address unresolved issues, concerns and problems raised by stakeholders

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

SKILL	DESCRIPTION
Reading	• Analyses and interprets textual information from the organisation's policies, goals and objectives to establish team goals or to determine corrective action
Writing	• Prepares workplace documentation that communicates complex information clearly and effectively
Oral Communication	• Engages in discussions or provides information using appropriate vocabulary and non-verbal features • Uses listening and questioning techniques to confirm understanding and to engage the audience
Enterprise and initiative	• Identifies how own role contributes to broader organisational goals • Modifies or develops policies and procedures to achieve organisational goals
Teamwork	• Selects and uses appropriate conventions and protocols when communicating with diverse stakeholders • Uses interpersonal skills to gain trust and confidence of team and

	provides feedback to others in forms that can be understood and used • Adapts personal communication style to build positive working relationships and to show respect for the opinions, values and particular needs of others
Planning and organising	• Develops, implements and monitors plans and processes to ensure team effectiveness • Monitors and actively supports processes and development activities to ensure the team is focused on work outcomes • Plans for unexpected outcomes and implements creative responses to overcome challenges

Unit Mapping Information

Supersedes and is equivalent to BSBWOR502 Lead and manage team effectiveness.

Supersedes but is not equivalent to:

- BSBMGT520 Plan and manage the flexible workforce
- BSBWRK409 Prepare for and participate in dispute resolution.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

Assessment Requirements for BSBTWK502 Manage team effectiveness

Modification History

Release	Comments
Release 1	This version first released with BSB Business Services Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- manage the effectiveness of at least one work team.

In the course of the above, the candidate must:

- provide feedback to encourage, value and reward others
- model desired behaviour and practices
- encourage and foster shared understanding of purpose, roles and responsibilities
- support team to meet expected performance outcomes including providing formal and informal learning opportunities as needed
- develop performance plans with key performance indicators (KPIs), outputs and goals for individuals or the team which incorporate input from stakeholders
- communicate effectively with a range of stakeholders about team performance plans and team performance
- evaluate and take necessary corrective action regarding unresolved issues, concerns and problems raised by internal or external stakeholders.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- impacts of group dynamics on team performance
- methods of establishing team activities including communication processes
- strategies that can support team cohesion, participation and performance
- strategies for gaining consensus
- issue resolution strategies.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- workplace documents relevant to team task objectives.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=11ef6853-ceed-4ba7-9d87-4da407e23c10

CPCCLDG3001 Licence to perform dogging

Modification History

Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.1.

Minor edits to formatting.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLDG3001A Licence to perform dogging. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform dogging work. Dogging consists of the application of slinging techniques to move a load, including the selection and inspection of lifting gear, and the directing of a plant operator in the movement of a load when the load is out of sight of the operator.

Dogging work is conducted in the construction industry and other industries where loads are lifted and moved using cranes or hoists.

Completion of the general construction induction training program, specified in the Safe Work Australia model Code of Practice: Construction Work, is required by anyone carrying out construction work. Achievement of CPCCWHS1001 Prepare to work safely in the construction industry meets this requirement.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

Nil.

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the Performance criteria describe what needs to be done to

essential outcomes.	demonstrate achievement of the element.	
1 Plan task.	1.1	Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2	Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3	Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4	Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5	Calculate load weight, dimensions and centre of gravity.
	1.6	Determine lifting and slinging points.
	1.7	Calculate derated working load limit (WLL) of lifting equipment resulting from selected slinging techniques.
	1.8	Establish required communication methods with plant operator.
2 Select and inspect equipment.	2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.
	2.2	Select and check PPE.
	2.3	Select lifting equipment and gear, inspect for defects, and isolate, tag out, report and record defective items.
	2.4	Select communication equipment and check that it is working and fit for use.
3 Set up task.	3.1	Establish and maintain communication with relevant persons to ensure lift plan and risk controls are communicated clearly, including any impact on other

		workplace activities.
	3.2	Ensure risk controls and safety measures and equipment have been put in place.
	3.3	Prepare lifting equipment and gear for safe use.
	3.4	Consult with relevant persons to ensure that the load destination is stable, able to bear the load and prepared for safe access and landing.
	3.5	Attach and secure lifting equipment and gear to the plant-designated lifting point.
4 Perform task.	4.1	Direct plant designated lifting point/hook, over the load's centre of gravity.
	4.2	Attach and secure lifting equipment and gear to the load using slinging techniques.
	4.3	Attach and secure tag line as required to guide the load.
	4.4	Use signals and radio communication methods to direct the load movement, both in and out of sight of the plant operator.
	4.5	Conduct test lift to check the security of the slings and the stability of the load, lifting equipment and gear.
	4.6	Direct the movement of the load in accordance with lift plan, including lowering and landing.
	4.7	Disconnect lifting gear from the load and direct the positioning of crane or hoist for next task.
5 Pack up and clean up.	5.1	Remove excess materials from work area.
	5.2	Inspect lifting equipment and gear for defects, and isolate, label and report defective items.
	5.3	Store lifting equipment and gear in accordance with workplace requirements.
	5.4	Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLDG3001A Licence to perform dogging.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

Assessment Requirements for CPCCLDG3001 Licence to perform dogging

Modification History

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Minor edits to formatting.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLDG3001A Licence to perform dogging. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by slinging and directing the movement of at least five loads of differing shapes, sizes and weights.

The loads must be moved by a slewing mobile crane of a maximum rated capacity of at least seven tonnes.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs), and equipment service and maintenance records and checklists
- perform all activities in compliance with safe work practices and workplace-specific procedures and policies, and check, use, maintain and store equipment in compliance with manufacturer requirements
- identify hazards and use appropriate risk controls and safety measures and equipment
- determine load weight and travel path in consultation with crane operator
- select and inspect appropriate lifting gear and apply slinging techniques appropriate to the type of load, its mass and centre of gravity
- identify the working load limit (WLL) tags of the lifting equipment and gear and calculate the deration of the WLL resulting from the slinging techniques applied
- make temporary connections to loads using fibre or synthetic ropes
- use radio communication and hand and whistle signals to guide the crane operator, including when the load is out of sight of the crane operator.

The candidate must use the following bends and hitches when slinging and directing the movement of loads:

- single sheet bend
- clove hitch

- rolling hitch
- bowline.

Load types must include:

- stillage containing at least ten scaffolding standards or loose steel pipes of 200 kg or more
- ten loose steel pipes, of at least 2 m length, that need wrapping
- an uneven load of at least two tonnes requiring slinging
- steel plate of at least 1.5 m x 2 m x 25 mm
- a round load with a minimum diameter of 300 mm and minimum length of 3 m.

The candidate must direct each load through at least 180 degrees of the crane's slewing radius.

Each of the following must be used at least once:

- flexible steel wire rope (FSWR) sling
- synthetic sling
- chain sling (including shortener)
- spreader bar or lifting beam
- tag line
- shackles
- eyebolts
- plate clamps.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for dogging under Commonwealth and state or territory work health and safety (WHS) legislation, standards and codes of practice
- workplace information, including legislative requirements covered by:
  - SWMSs
  - permits and certifications
  - information about equipment:
    - service and maintenance checklists and records
    - manufacturer specifications and manuals
  - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
  - elimination
  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - use of personal protective equipment (PPE)
- hazards commonly encountered in dogging:

  - instability of landing surfaces
  - overhead and underground hazards
  - insufficient lighting
  - traffic
  - weather
  - pedestrian traffic
  - work at heights
- risk controls and equipment:
  - traffic management plan
  - traffic barricades and control
  - exclusion zones
  - pedestrian barricades
  - PPE
  - lights
  - fall prevention and fall arrest equipment
- PPE:
  - hard hat
  - safety boots
  - gloves
  - high-visibility clothing
  - breathing, hearing, sight and skin and sun protection
- hand, whistle and two-way radio communication, including signals for:
  - stop
  - hoist up and down
  - luff boom up and down
  - telescope in and out
  - slew left and right
- selection, inspection, care, handling, application, limitations and storage of dogging equipment and gear:
  - (FSWR sling
  - synthetic sling
  - chain sling (including shortener)
  - spreader bar or lifting beam
  - tag line
  - shackles
  - eyebolts
  - plate clamps
- slinging techniques
- load destination stability, load capacity and safe access for walking and unpacking the load:

- ground
- loading platforms
- suspended floors
- vehicles

- mathematical processes for calculating deration of WLL of lifting equipment and gear due to slinging techniques
- methods of making temporary connections to loads using fibre and synthetic ropes:
  - single sheet bend
  - clove hitch
  - rolling hitch
  - bowline.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction governing the licence are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace.

Candidates must have access to:

- a slewing mobile crane of at least seven tonnes maximum rated capacity, and lifting equipment and gear in a safe and compliant condition
- loads and equipment required to perform the tasks specified in the Performance Evidence
- a licensed crane operator to undertake lifting activity
- workplace information and records, including:
  - equipment and maintenance checklists
  - record system for service and maintenance history
  - incident reports
  - workplace procedures, including emergency plan
  - equipment manuals and manufacturer specifications.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

CPCCLRG3001 Licence to perform rigging basic level

Modification History

Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.

Change to the Application of the unit.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLRG3001A Licence to perform rigging basic level. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform basic rigging work.

Riggers use mechanical load shifting equipment and associated gear to move, place or secure loads, including plant, equipment or members of a structure. Riggers ensure the stability of those members and set up and dismantle hoists.

This unit applies to rigging work involving:

- structural steel erection
- hoists
- pre-cast concrete members of a structure
- safety nets and static lines
- mast climbing work platforms
- perimeter safety screens and shutters
- cantilevered crane loading platforms.

Rigging work is undertaken in construction and other industries where load shifting equipment is used to move, place or secure loads.

Completion of the general construction induction training program, specified in the Safe Work Australia model *Code of Practice: Construction Work*, is required by anyone carrying out construction work. Achievement of CPCCWHS1001 *Prepare to work safely in the construction industry* meets this requirement.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit CPCCLDG3001 *Licence to perform dogging* or holding a valid licence for dogging.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

CPCCLDG3001 Licence to perform dogging

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required rigging equipment and associated gear.
	1.7 Calculate loads associated with mechanical load shifting equipment and associated gear required to erect and dismantle structures and plant.

	1.8	Establish required communication methods with relevant persons.
2 Select and inspect equipment.	2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.
	2.2	Select and check PPE.
	2.3	Select rigging equipment and associated gear, inspect for defects, and isolate, tag out, report and record defective items.
	2.4	Select communication equipment and check that it is working and fit for use.
3 Set up task.	3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.
	3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.
	3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.
	3.4	Consult with relevant persons to ensure that the structure has been assessed as suitable for load bearing task.
4 Undertake basic rigging activities.	4.1	Erect and dismantle all structures and plant while maintaining stability, in accordance with workplace and manufacturer requirements.
	4.2	Erect structural steel.
	4.3	Erect pre-cast concrete members of a structure, or lift and install a series of scenery panels.
	4.4	Erect and dismantle a safety net and static line.
	4.5	Erect and dismantle a hoist or mast climbing work

		platform.
	4.6	Install and dismantle a perimeter safety screen or shutter.
	4.7	Install and dismantle a cantilevered crane loading platform.
5 Complete task.	5.1	Remove excess materials from work area.
	5.2	Inspect structures, plant, equipment and gear for defects, and isolate, tag out and report defective items.
	5.3	Store plant, equipment and gear in accordance with workplace requirements.
	5.4	Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLRG3001A Licence to perform rigging basic level.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

Assessment Requirements for CPCCLRG3001 Licence to perform rigging basic level

Modification History

Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.

Change to the Application of the unit.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLRG3001A Licence to perform rigging basic level. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by safely performing rigging tasks at a basic level, including:

- erecting and dismantling a portal frame of structural steel consisting of columns (150 UC 29.8 kg/m), beams (minimum 200 UB 29.8 kg/m) and braces in accordance with engineering detail. It must include:
  - appropriate structural bolts, nuts, washers, purlins and girts
  - beams installed at a height of at least 4 m
  - suitable access and working platform (e.g. elevated work platform, mobile scaffold, scissor lift, portable industrial grade ladder)

It must be packed and plumbed and include temporary bracing during erection and dismantling. Hand tools and working at height safety equipment, including harness, lanyard and inertia reel, must be used

- installing and removing a series of three retaining wall panels, each panel being not less than 4 m high by 2 m wide and not less than 1.5 tonnes. One panel must be set at a 90-degree angle to one of the other panels - candidates must identify any defective lifting equipment
- installing and removing a safety (catch) net with minimum dimensions of 3 m x 4 m in accordance with manufacturer specification and engineering detail on portal frame - candidates must identify any defective nets
- installing, using and removing a static line at least 2.1 m above the beams on portal frame, in accordance with manufacturer specifications and engineering detail – candidates must identify any defective static lines and associated equipment
- installing and removing a cantilevered materials hoist (1 or 2 barrow) or a mast climbing work platform of at least three mast sections and tied in accordance with specifications

- installing and dismantling a perimeter safety screen or shutter of at least 4 m x 2 m in accordance with manufacturer specifications and engineering detail
- installing and dismantling a cantilevered crane loading platform at a height of at least 4 m with secure gates and handrails in accordance with manufacturer specifications and engineering detail
- setting up and operating a powered winch to move a load of at least 1 tonne
- using the following splice and hitch techniques:
  - eye splice
  - becket hitch.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists
- perform all activities in compliance with workplace-specific, safe work and manufacturer requirements
- use the following associated gear:
  - beam clamps or pipe clamps or plate clamps
  - tag lines
  - flexible steel wire rope (FSWR)
  - chains
  - wire and synthetic slings
  - shackles
  - wedge sockets
  - eye bolts
  - rope grips
  - turnbuckles
  - chain blocks
  - sheave blocks
  - spreader bars or lifting beam
  - levers/podgers
  - skates/rollers
  - wedges
  - props
  - powered winches
  - snatch blocks
  - wire rope winches
  - lever pull (e.g. come-alongs)
- identify hazards and use appropriate risk controls and safety measures and equipment
- safely erect and dismantle structures and plant.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for rigging under Australian Standards and Commonwealth and state or territory work health and safety (WHS) legislation, regulations, standards and codes of practice
- workplace information, including legislative requirements covered by:
  - SWMSs
  - permits and certifications
  - information about equipment:
    - service and maintenance checklists and records
    - manufacturer and supplier specifications and manuals
  - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
  - elimination
  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - use of personal protective equipment (PPE)
- hazards commonly encountered in rigging basic level:
  - instability of work areas
  - damaged or poor-quality equipment
  - overhead and underground hazards
  - electrical items
  - mobile plant
  - insufficient lighting
  - wind and other adverse weather conditions
  - traffic
  - pedestrian traffic
  - hazardous manual tasks
  - falling objects
  - falls from heights
- minimum clearance distance from powerlines or electrical equipment specific to mobile plant and scaffolding and other structures as determined by relevant state or territory authority or electrical supply authority
- risk controls and equipment:
  - traffic control
  - pedestrian barricades
  - PPE
  - adequate illumination

    - safety structures and screens
- inspection, handling and storage of rigging structures and equipment, associated gear, and other required equipment:
    - rigging structures and equipment:
        - elevated work platforms
        - cantilevered crane loading platforms
        - portal frames
        - hoists
        - pre-cast concrete members
        - mast climbing work platform
        - safety screens and shutters
        - safety nets
    - associated gear:
        - power and manually operated lifting gear
        - lifting clutches
        - tag lines
        - FSWR
        - chains
        - wire and synthetic slings
        - shackles
        - terminations
        - wedge sockets
        - eye bolts
        - beam clamps
        - pipe clamps
        - plate clamps
        - rope grips
        - turnbuckles
        - chain blocks
        - lever blocks
        - lever-action winches
        - sheaves
        - spreader bars
        - lifting beams
        - jacks
        - levers
        - skates
        - wedges
        - rollers
        - beam trolley

    - props
  - safety equipment:
    - full-body safety harness
    - energy absorber
    - lanyard
    - inertia reel (fall arrester)
    - static safety lines
  - PPE:
    - hard hat
    - safety boots
    - gloves
    - high-visibility clothing
    - breathing, hearing, sight, skin and sun protection
  - communication equipment:
    - two-way radios
    - whistles
- relevant persons:
  - doggers
  - riggers
  - crane operators
  - engineers
  - supervisors
- ground and foundation suitability:
  - rough, uneven ground
  - backfilled ground
  - soft soils
  - hard compacted soil
  - rock
  - bitumen
  - concrete
  - suspended concrete floors
  - building roofs
  - landings
  - ground bearing pressure
- mathematical processes for estimating and measuring loads for basic rigging
- techniques for making temporary connections.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
  - equipment and maintenance checklists
  - record system for service and maintenance history
  - incident reports
  - workplace procedures, including SWMSs and emergency plans
  - equipment manuals and manufacturer specifications
  - relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

CPCCLRG3002 Licence to perform rigging intermediate level

Modification History

Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.

Changes to the Application of the unit and Performance Criteria 4.3.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLRG3002A Licence to perform rigging intermediate level. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to safely perform intermediate rigging work.

Riggers use mechanical load shifting equipment and associated gear to move, place or secure loads, including plant, equipment or members of a building or structure. Riggers ensure the stability of those members and set up and dismantle cranes and hoists.

This unit includes rigging work involving:

- hoists with jibs and self-climbing hoists
- cranes, conveyors, dredges and excavators
- tilt slabs
- demolition of structures or plant
- multiple lifts.

Rigging work is undertaken in construction and other industries where load shifting equipment is used to move, place or secure loads.

Completion of the general construction induction training program, specified in the Safe Work Australia model Code of Practice: Construction Work, is required by anyone carrying out construction work. Achievement of CPCCWHS1001 Prepare to work safely in the construction industry meets this requirement.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLRG3001 Licence to perform rigging basic level* or holding a valid licence for basic rigging.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

CPCCLRG3001 Licence to perform rigging basic level

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required rigging equipment and associated gear.
	1.7 Calculate loads associated with mechanical load shifting equipment and associated gear required to erect and dismantle structures and plant.
	1.8 Establish required communication methods with relevant persons.

2 Select and inspect equipment.	2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.
	2.2	Select and check PPE.
	2.3	Select rigging equipment and associated gear, inspect for defects, and isolate, tag out, report and record defective items.
	2.4	Select communication equipment and check that it is working and fit for use.
3 Set up task.	3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.
	3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.
	3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.
	3.4	Consult with relevant persons to ensure that the structure has been assessed as suitable for load bearing task.
4 Undertake intermediate rigging activities.	4.1	Erect and dismantle all structures and operate plant while maintaining stability, in accordance with workplace and manufacturer requirements.
	4.2	Conduct a multiple-crane lift.
	4.3	Erect and dismantle one of the following: a tower crane section or a crane lattice boom section, or a fly jib on a mobile slewing or a non-guyed tower crane.
	4.4	Lift and install a series of tilt-up concrete panels.
	4.5	Remove a concrete-encased structural steel column and beam.

5 Complete task.	5.1	Remove excess materials from work area.
	5.2	Inspect structures, plant, equipment and gear for defects, and isolate, tag out and report defective items.
	5.3	Store plant, equipment and gear in accordance with workplace requirements.
	5.4	Remove risk controls and safety measures and equipment.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLRG3002A Licence to perform rigging intermediate level.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

Assessment Requirements for CPCCLRG3002 Licence to perform rigging intermediate level

Modification History

Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.

Changes to the Application of the unit and Performance Criteria 4.3.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLRG3002A Licence to perform rigging intermediate level. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by safely performing rigging tasks at an intermediate level, including:

- undertaking a multiple-crane lift of a load of at least 1 tonne and at least 4 m long
- erect and dismantle one of the following:
  - a tower crane section
  - crane lattice boom section
  - a fly jib on a mobile slewing
  - a non-guyed tower crane.
- installing and removing a three-panel structure, with each panel being at least 4 m high, at least 2 m wide and at least 1.5 tonnes
- using the following bends and hitches:
  - round turn
  - two half-hitches.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists
- perform all activities in compliance with workplace-specific, safe work and manufacturer requirements
- identify hazards and use appropriate risk controls and safety measures and equipment
- use the following associated gear:
  - tag lines
  - flexible steel wire rope (FSWR)
  - chains

  - wire and synthetic slings
  - shackles
  - wedge sockets
  - eye bolts
  - rope grips
  - turnbuckles
  - chain blocks
  - sheaves
  - spreader bars or lifting beams
  - snatch blocks
  - lifting clutches
- safely erect and dismantle structures and plant.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for rigging under Australian Standards, and Commonwealth and state or territory work health and safety (WHS) legislation, regulations, standards and codes of practice
- workplace information, including legislative requirements covered by:
  - SWMSs
  - permits and certifications
  - information about equipment:
    - service and maintenance checklists and records
    - manufacturer and supplier specifications and manuals
  - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
  - elimination
  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - use of personal protective equipment (PPE)
- hazards commonly encountered in rigging intermediate level:
  - instability of work areas
  - damaged or poor-quality equipment
  - overhead and underground hazards
  - electrical items
  - mobile plant
  - insufficient lighting

    - wind and other adverse weather conditions
    - traffic
    - pedestrian traffic
    - hazardous manual tasks
    - falling objects
    - falls from heights
- minimum clearance distance from powerlines or electrical equipment specific to mobile plant and scaffolding as determined by relevant state or territory authority or electrical supply authority
- risk controls and equipment:
    - traffic barricades and control
    - pedestrian barricades
    - PPE
    - adequate illumination
    - safety structures and screens
    - exclusion zones
- inspection, handling and storage of rigging structures and equipment, associated gear, and other required equipment:
    - rigging structures and equipment:
        - concrete tilt-up panels
        - non-guyed light towers
        - scaffolds
        - elevated work platforms
        - personnel box
        - cantilevered crane loading platforms
        - mast climbers
        - safety screens and shutters
        - cranes
    - associated gear:
        - power and manually operated lifting gear
        - lifting clutches
        - snatch blocks
        - tag lines
        - FSWR
        - chains
        - wire and synthetic slings
        - shackles
        - terminations
        - wedge sockets
        - eye bolts

        - beam clamps
        - pipe clamps
        - plate clamps
        - wire rope grips
        - turnbuckles
        - rigging screws
        - chain blocks
        - lever blocks
        - lever-action winches
        - sheaves
        - spreader bars
        - lifting beams
        - jacks
        - levers
        - skates
        - wedges
        - rollers
        - beam trolley
    - safety equipment:
        - safety harness
        - energy absorber
        - lanyard
        - inertia reel
        - static safety lines
    - PPE:
        - hard hat
        - safety boots
        - gloves
        - high-visibility clothing
        - breathing, hearing, sight, skin and sun protection
    - communication equipment:
        - two-way radios
        - whistles
- relevant persons:
    - doggers
    - riggers
    - load-shifting plant operators
    - engineers
    - supervisors
- ground and foundation suitability:

  - rough, uneven ground
  - backfilled ground
  - soft soils
  - hard compacted soil
  - rock
  - bitumen
  - concrete
  - suspended concrete floors
  - building roofs
  - landings
  - ground bearing pressure
- mathematical processes for estimating and measuring forces and loads for intermediate rigging
- techniques for making temporary connections by tying bends and hitches:
  - round turn
  - two half-hitches.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
  - equipment and maintenance checklists
  - record system for service and maintenance history
  - incident reports
  - workplace procedures, including SWMSs and emergency plans
  - equipment manuals and manufacturer specifications
  - relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

CPCCLRG4001 Licence to perform rigging advanced level

Modification History

Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.

Change to the Application of the unit.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLRG4001A Licence to perform rigging advanced level. Updated to meet the Standards for Training Packages 2012

Application

This unit specifies the skills and knowledge required to safely perform advanced rigging work.

Riggers use mechanical load shifting equipment and associated gear to move, place or secure loads, including plant, equipment or members of a building or structure. Riggers ensure the stability of those members and set up and dismantle cranes and hoists.

This unit applies to rigging work involving:

- gin poles and shear legs
- flying foxes and cable ways
- guyed derricks and structures
- suspended scaffolds and fabricated hung scaffolds.

Rigging work is undertaken in construction and other industries where load shifting equipment is used to move, place or secure loads.

Completion of the general construction induction training program, specified in the Safe Work Australia model *Code of Practice: Construction Work*, is required by anyone carrying out construction work. Achievement of *CPCCWHS1001 Prepare to work safely in the construction industry* meets this requirement.

This unit has a pre-requisite requirement. This requirement may be met by either the successful completion of the unit *CPCCLRG3002 Licence to perform rigging intermediate level* or holding a valid licence for intermediate rigging.

Competence in this unit does not in itself result in a licence. A licence is obtained after competence is assessed under applicable Commonwealth, state or territory work health and safety (WHS) regulations.

Pre-requisite Unit

CPCCLRG3002 Licence to perform rigging intermediate level

Unit Sector

Licencing

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe what needs to be done to demonstrate achievement of the element.
1 Plan task.	1.1 Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
	1.2 Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
	1.3 Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
	1.4 Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
	1.5 Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
	1.6 Identify required rigging equipment and associated gear.
	1.7 Calculate loads associated with mechanical load shifting equipment and associated gear required to erect and dismantle structures and plant.
	1.8 Establish communication methods with associated personnel.

2 Select and inspect equipment.	2.1	Select risk controls and equipment, including fall prevention and fall arrest equipment, and check that it is working and fit for purpose.
	2.2	Select and check PPE.
	2.3	Select rigging equipment and associated gear, inspect for defects, and isolate, tag out, report and record defective items.
	2.4	Select communication equipment and check that it is working and fit for use.
3 Set up task.	3.1	Establish and maintain communication with relevant persons to ensure task plan and risk controls are communicated clearly, including any impact on other workplace activities.
	3.2	Ensure risk controls and safety measures and equipment have been put in place, including the fitting, adjusting and anchoring of fall protection equipment.
	3.3	Consult with relevant persons to ensure that ground and foundation have been assessed as suitable for task.
	3.4	Consult with relevant persons to ensure that the structure has been assessed as suitable for load bearing task.
4 Undertake advanced rigging activities.	4.1	Erect, operate and dismantle all structures and plant while maintaining stability, in accordance with workplace and manufacturer requirements.
	4.2	Erect gin poles or sheer legs, operate winch to move load, and dismantle.
	4.3	Erect flying fox or cable way, operate to move a load, and dismantle.
	4.4	Erect guyed derrick, operate to move a load, and dismantle.
	4.5	Erect, operate and dismantle suspended scaffold.
	4.6	Install and remove fabricated hung scaffold.

5 Complete task.	5.1	Remove excess materials from work area.
	5.2	Inspect structures, plant, equipment and gear for defects, and isolate, tag out and report defective items.
	5.3	Store plant, equipment and gear in accordance with workplace requirements.
	5.4	Remove risk controls safety measures and equipment.
	5.5	Complete handover certificates, and attach scaffolding tags for suspended scaffold and hung scaffold.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCLRG4001A Licence to perform rigging advanced level.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

Assessment Requirements for CPCCLRG4001 Licence to perform rigging advanced level

Modification History

Release 2 This version first released with CPC Construction, Plumbing and Services Training Package Release 8.0.

Change to the Application of the unit.

Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCCLRG4001A Licence to perform rigging advanced level. Updated to meet the Standards for Training Packages 2012

Performance Evidence

To demonstrate competency in this unit, a candidate must meet the elements and performance criteria by erecting, using and dismantling the following:

- gin pole or shear leg of a height of 8 m or more and a working load limit of 400 kg or more. The winch must be powered with at least one diversion sheave
- a flying fox or cable way of a height of at least 4 m and a span distance of at least 10 m and able to support at least 200 kg - the rope span may be supported from fixed anchorages, poles, or both
- guyed derricks and structures of a minimum height of 8 m
- a suspended scaffold of a height of at least 4 m with a minimum capacity of at least 200 kg attached by a dual needle system using counterweights and powered winch
- a fabricated hung scaffold of at least 4 m height and 3.4 m length, and consisting of one continuous platform of heavy-duty capacity.

The candidate must:

- check relevant workplace information, including safe work method statements (SWMSs) and equipment service and maintenance records and checklists
- perform all activities in compliance with workplace-specific, safe work and manufacturer requirements, including the completion of required handover certificates
- identify hazards and use appropriate risk controls and safety measures and equipment
- use all the associated gear listed under Knowledge Evidence
- safely erect, use and dismantle structures and plant.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- safe work requirements for rigging under Australian Standards, and Commonwealth and state or territory work health and safety (WHS) legislation, regulations and codes of practice
- workplace information, including legislative requirements covered by:
  - SWMSs
  - permits and certifications
  - information about equipment:
    - service and maintenance checklists and records
    - manufacturer and supplier specifications and manuals
  - workplace procedures, including emergency plans and incident reporting
- hazard identification and mitigation strategies, including the hierarchy of control:
  - elimination
  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - use of personal protective equipment (PPE)
- hazards commonly encountered in rigging advanced level:
  - instability of work areas
  - damaged or poor-quality equipment
  - overhead and underground hazards
  - electrical items
  - mobile plant
  - insufficient lighting
  - wind and other adverse weather conditions
  - traffic
  - pedestrian traffic
  - hazardous manual tasks
  - falling objects
  - falls from heights
- minimum clearance distance from powerlines or electrical equipment specific to mobile plant and scaffolding as determined by relevant state or territory authority or electrical supply authority
- risk controls and equipment:
  - traffic barricades and control
  - pedestrian barricades
  - PPE:
    - hard hat
    - safety boots
    - gloves

        - high-visibility clothing
        - breathing, hearing, sight, skin and sun protection
    - adequate illumination
    - safety structures and screens
- inspection, handling and storage of rigging structures and equipment, associated gear, and other required equipment:
    - rigging structures and equipment:
        - gin poles
        - flying foxes
        - shear legs
        - cable ways
        - guyed derricks
        - suspended scaffolds
        - fabricated hung scaffolds
    - associated gear:
        - power and manually operated lifting gear
        - tag lines
        - flexible steel wire rope (FSWR)
        - chains
        - wire and synthetic slings
        - shackles
        - terminations
        - eye bolts
        - beam clamps
        - rope grips
        - turnbuckles
        - rigging screws
        - lever blocks
        - lever-action winches
        - sheaves
        - scaffold and rigging tools
        - jacks
        - levers
        - skates
        - wedges
        - rollers
        - girder trolley
    - safety equipment:
        - safety harness
        - energy absorber

    - lanyard
    - inertia reel
    - static safety lines
  - communication equipment:
    - two-way radios
    - whistles
  - associated personnel:
    - doggers
    - riggers
    - crane operators
    - engineers
    - supervisors
- ground and foundation suitability:
  - rough, uneven ground
  - backfilled ground
  - soft soils
  - hard compacted soil
  - rock
  - bitumen
  - concrete
  - suspended concrete floors
  - building roofs
  - landings
  - ground bearing pressure
- supporting beams or structures load bearing capacity
- mathematical processes for calculating loads for advanced rigging.

Assessment Conditions

Assessors must meet the requirements for assessors outlined in the Standards for Registered Training Organisations.

Only assessors who are accredited in the licence class by the appropriate WHS regulator for the jurisdiction where the licence is obtained are permitted to conduct the final high-risk work licence assessment. The final licence assessment will only be undertaken with candidates who have completed training and been formally assessed against all elements in this unit.

Assessment must be conducted in the workplace or in a simulated workplace environment using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations, including:

- the use of full-scale, industry-standard equipment, not simulators
- performance of tasks within the timelines expected in a workplace.
- participation of the candidate in activities within a team of three to five members.

Candidates must have access to:

- all personnel and equipment required to perform the tasks specified in the Performance Evidence
- workplace information and records, including:
- equipment and maintenance checklists
- record system for service and maintenance history
- incident reports
- workplace procedures, including SWMSs and emergency plans
- equipment manuals and manufacturer specifications
- relevant plant supplier information.

Links

Companion volumes to this training package are available at the VETNet website - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad

FWPHAR2208 Operate a mobile chipper/mulcher

Modification History

Release	Comments
Release 1	This version released with FWP Forest and Wood Products Training Package Version 6.0.

Application

This unit of competency describes the skills and knowledge required to operate a hand-fed or machine-fed mobile chipping or mulching unit to chip or mulch timber refuse such as branches and other timber waste.

The unit applies to individuals who operate mobile chippers/mulchers as part of arboriculture, forestry, agriculture, conservation and land management, local government, emergency services and other government agency operations.

All work must be carried out to comply with workplace procedures, according to state/territory health and safety regulations, legislation and standards that apply to the workplace.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Harvesting and Haulage (HAR)

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare for chipping or mulching	1.1 Determine job requirements from work order or instruction and, where required, seek clarification from appropriate personnel 1.2 Confirm safety and environmental protection requirements for the

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	task according to workplace procedures 1.3 Identify, assess and take actions to mitigate risks and hazards associated with operating mobile chippers/mulchers 1.4 Identify type and quantity of material to be chipped or mulched 1.5 Plan chipping/mulching activities according to work order or instruction and environmental conditions 1.6 Consult and maintain communication with team members and other appropriate personnel to ensure that work is coordinated effectively with others in the workplace 1.7 Select, fit and use personal protective equipment 1.8 Obtain tools and equipment needed for the work, and check for correct operation and safety
2. Chip or mulch material	2.1 Reject material assessed as unsuitable for chipping or mulching, and dispose of or recycle according to workplace and environmental protection practices 2.2 Use equipment according to workplace safety procedures, manufacturer instructions and environmental protection requirements 2.3 Position, secure and set up chipping and mulching unit according to manufacturer specifications and required size 2.4 Direct material into chipper or mulcher at rate applicable to machine capacity using safe methods for loading and feeding 2.5 Respond to critical situations requiring emergency shutdown to prevent personal injury or damage to machine or product 2.6 Direct chipped or mulched material onto stock pile or transport vehicle if required
3. Complete operator maintenance	3.1 Follow workplace safety procedures and manufacturer instructions to lock out equipment 3.2 Complete operational safety checks according to manufacturer recommendations 3.3 Check cutters for wear and damage as required or at intervals recommended by manufacturer 3.4 Check and replenish fuel and lubricants according to manufacturer recommendations 3.5 Clean and store chipper/mulcher 3.6 Record and report production outcomes and equipment faults to

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	appropriate personnel

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	• Interpret workplace documentation to determine requirements
Writing	• Use technical and workplace specific vocabulary to accurately and legibly complete workplace records and forms
Oral communication	• Ask questions and actively listen to clarify contents of work orders
Numeracy	• Identify quantities of required material within work orders • Interpret basic numerical machine settings, and choose according to chip size • Complete routine production records involving quantities tallied against orders

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FWPHAR2208 Operate a mobile chipper/mulcher	FWPHAR2206 Operate a mobile chipper/mulcher	Clarified Application Updated and added new Performance Criteria Re-titled Element Added new knowledge items Updated Foundation Skills, Performance Evidence and Assessment	Equivalent

Code and title current version	Code and title previous version	Comments	Equivalence status
		Conditions	

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0d96fe23-5747-4c01-9d6f-3509ff8d3d47

Assessment Requirements for FWPHAR2208 Operate a mobile chipper/mulcher

Modification History

Release	Comments
Release 1	This version released with FWP Forest and Wood Products Training Package Version 6.0.

Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has:

- assessed, planned and conducted the chipping or mulching of two different species of material
- followed workplace policy and procedures and current workplace health and safety legislation, regulations and related industry standards and codes of practice applicable to wood chipping or mulching operations
- inspected and carried out routine operator maintenance on one mobile chipper/mulcher on one occasion according to manufacturer requirements.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- environmental protection practices related to wood chipping or mulching operations:
  - energy use
  - cleaning plant, tools and equipment
  - disposing of, recycling and reusing waste products
- types of material suitable and unsuitable for chipping and mulching
- types, purpose, features and operation of mobile chipping and mulching units
- capacity of chippers and mulchers to cope with differing sizes and diameters of branch
- feed rates at which material is fed into chippers and mulchers to optimise output without damaging or blocking machinery
- feeding techniques to minimise operator exposure to injury
- techniques for loading chipped/mulched material into truck or transport vehicle
- criteria and methods for checking cutting blade condition

- operator maintenance procedures for fuelling, safety checks, cleaning, lubricating, operational adjustments and cutter inspection for wear or damage, replacement and disposal
- common hazards associated with chipping and mulching operations and methods to minimise associated risks
- workplace procedures specific to chipping and mulching:
  - workplace health and safety, with particular emphasis on equipment lock-out, use of personal protective equipment (PPE) and safe manual handling
  - communication reporting lines
  - recording and reporting production outcomes and equipment faults.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
  - competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting
- resources, equipment and materials:
  - mobile chipper or mulcher
  - truck or transport vehicle suitable for transporting chipped/mulched material if required by site requirements
  - material to chip or mulch
  - PPE required in chipping and mulching operations
  - communication system
- specifications:
  - access to workplace safety and environmental protection policies and procedures applicable to chipping or mulching operations
  - access to workplace standard operating procedures or operator manual for mobile chippers or mulchers.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0d96fe23-5747-4c01-9d6f-3509ff8d3d47

HLTAID009 Provide cardiopulmonary resuscitation

Modification History

Not applicable.

Application

This unit describes the skills and knowledge required to perform cardiopulmonary resuscitation (CPR) in line with the Australian Resuscitation Council (ARC) guidelines.

This unit applies to all persons who may be required to provide CPR, in a range of situations, including community and workplace settings.

Specific licensing/regulatory requirements relating to this competency, including requirements for refresher training should be obtained from the relevant national/state/territory Work Health and Safety Regulatory Authorities.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Respond to an emergency situation.	1.1. Recognise and assess an emergency situation. 1.2. Ensure safety for self, bystanders and casualty. 1.3. Assess the casualty and recognise the need for cardiopulmonary resuscitation (CPR). 1.4. Seek assistance from emergency services.
2. Perform CPR procedures.	2.1. Perform CPR in accordance with the ARC guidelines. 2.2. Display respectful behaviour towards casualty. 2.3. Operate an automated external defibrillator (AED) according to manufacturers' instructions.
3. Communicate details of the incident.	3.1. Accurately convey incident details to emergency services. 3.2. Report details of incident in line with appropriate workplace or site procedures. 3.3. Maintain privacy and confidentiality of information in line with statutory or organisational policies.

4. Review the incident.	4.1. Recognise the possible psychological impacts on self and other rescuers and seek help when required. 4.2. Contribute to a review of the first aid response as required.

Foundation Skills

The Foundation Skills describe those required skills (language, literacy, numeracy and employment skills) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and not equivalent to HLTAID001 Perform cardiopulmonary resuscitation

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

Assessment Requirements for HLTAID009 Provide cardiopulmonary resuscitation

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the workplace or community setting.

There must be evidence that the candidate has completed the following tasks in line with State/Territory regulations, first aid codes of practice, first aid guidelines determined by the Australian Resuscitation Council (ARC) and other Australian national peak clinical bodies and workplace or site procedures:

- managed, in line with ARC guidelines, the unconscious, breathing casualty including appropriate positioning to reduce the risk of airway compromise
- managed, in line with ARC guidelines, the unconscious, non-breathing adult, including:
  - performing at least 2 minutes of uninterrupted single rescuer cardiopulmonary resuscitation (CPR) (5 cycles of both compressions and ventilations) on an adult resuscitation manikin placed on the floor
  - following the prompts of an automated external defibrillator (AED) to deliver at least one shock
  - demonstrating a rotation of single rescuer operators with minimal interruptions to compressions
  - responding appropriately in the event of regurgitation or vomiting
  - handing over to emergency services
  - providing an accurate verbal report of the incident
  - reviewing the incident
- managed, in line with ARC guidelines, the unconscious, non-breathing infant, including:
  - performing at least 2 minutes of uninterrupted single rescuer CPR (5 cycles both compressions and ventilations) on an infant resuscitation manikin placed on a firm surface.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- guidelines and procedures including:
  - relevant ARC guidelines to managing the unconscious breathing and non-breathing casualty and provision of CPR
  - potential incident hazards and risk minimisation processes when providing first aid

    - infection control procedures, including use of standard precautions and resuscitation barrier devices
    - requirements for currency of skill and knowledge
    - first aid codes of practice
    - appropriate workplace or site procedures relevant to the provision of first aid
- legal, workplace and community considerations, including:
    - duty of care requirements
    - own skills and limitations
    - consent and how it relates to the conscious and unconscious casualty
    - privacy and confidentiality requirements
    - awareness of potential need for stress management techniques and available support for rescuers
- considerations when providing CPR, including:
    - upper airway and effect of positional change
    - appropriate duration and cessation of CPR
    - appropriate use of an AED
    - safety and maintenance procedures for an AED
    - chain of survival
    - how to access emergency services
- techniques for providing CPR to adults, children and infants including:
    - how to recognise that a casualty is unconscious and not breathing normally
    - rate, ratio and depth of compressions and ventilations
    - correct hand positioning for compressions
    - basic anatomy, physiology and the differences between adults, children and infants relating to CPR.

Assessment Conditions

Each candidate to demonstrate skills in an environment that provides realistic in-depth, scenarios and simulations to assess candidates' skills and knowledge.

Due to the nature of this type of training, it is acceptable for the performance evidence to be collected in a simulated environment.

Compression and ventilation skills must be demonstrated on resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures.

Assessment must ensure access to:

- adult and infant resuscitation manikins following ARC guidelines for the purpose of assessment of CPR procedures
- AED training devices
- personal protective equipment (PPE).

Simulated assessment environments must simulate real-life situations where these skills and knowledge would be performed, with all the relevant equipment and resources of that workplace or community environment.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors and must hold this unit or demonstrate equivalent skills and knowledge to that contained within this unit.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ced1390f-48d9-4ab0-bd50-b015e5485705

ICTWHS202 Work safely in a radio frequency electromagnetic radiation environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Application

This unit describes the performance outcomes, skills and knowledge required to use organisational risk control procedures when working with a risk of exposure to radio frequency (RF) electromagnetic radiation (EMR) hazards.

The unit applies to site maintenance staff, technicians and installers who install or maintain equipment at installations that are sources of RF EMR.

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the ICT Implementation Guide Companion Volume or the relevant regulator for details of licensing, legislative or certification requirements.

Unit Sector

Telecommunications – work health and safety

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Prepare to work in RF EMR environment	1.1 Identify characteristics of RF EMR and situations that can lead to exposure to RF EMR hazards 1.2 Identify potential effects of RF EMR on human body and contributing factors that affect it 1.3 Research relevant regulations and standards that apply to

ELEMENT	PERFORMANCE CRITERIA
	working with and controlling RF EMR hazards 1.4 Obtain and review RF EMR information required for work environment
2. Assess RF EMR risks	2.1 Assess potential RF EMR hazards in telecommunications work environment 2.2 Estimate likely field strength pattern of potential RF EMR hazard
3. Control RF EMR risks	3.1 Explain typical organisational controls to manage and control identified RF EMR hazards 3.2 Choose and apply appropriate RF EMR controls 3.3 Report EMR exposure that exceeds acceptable levels according to organisational work health and safety (WHS) requirements

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1-1.4, 2.1, 2.2, 3.1	• Uses a number of reading strategies to identify and interpret relevant information within familiar text types
Writing	3.3	• Prepares organisational WHS documentation using clear language, correct spelling and terminology
Oral Communication	3.3	• Uses clear language and concepts, and tone and pace appropriate for the audience and purpose
Numeracy	2.2	• Performs mathematical calculations to estimate, interpret and compare RF signal strength
Navigate the world of work	1.3, 1.4, 3.1-3.3	• Understands responsibility to comply with legal and regulatory requirements
Interact with others	3.3	• Identifies and takes steps to follow accepted communication practices and protocols
Get the work done	1.1-1.4, 2.1, 3.1, 3.2	• Follows clearly defined instructions and sequencing, and monitors own progress for the task, seeking assistance when necessary

		• Makes low-impact decisions within familiar situations, based on a range of predefined or routine solutions • Responds to predictable routine problems and implements standard or logical solutions

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTWHS202 Work safely in a radio frequency electromagnetic radiation environment	ICTWHS2081A Work safely in a radio frequency electromagnetic radiation environment	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

Assessment Requirements for ICTWHS202 Work safely in a radio frequency electromagnetic radiation environment

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 2.0.

Performance Evidence

Evidence of the ability to:

- identify the effect of radio frequency (RF) electromagnetic radiation (EMR) on the human body
- locate, interpret and apply relevant information, standards and specifications for working safely with RF EMR
- identify organisational controls for exposure to RF EMR, including lock-out procedures and the use of personal protective equipment
- identify risks and safety requirements and record in a job safety analysis (JSA) sheet or safe work method statement (SWMS) or similar record sheet
- select and use appropriate processes, tools and equipment to minimise RF EMR risk
- comply with regulations, standards and organisational procedures and processes
- communicate and work effectively and safely with others.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the characteristics of RF EMR and sources of RF EMR, and state their effect on the human body
- describe the nature of work undertaken close to sources of RF EMR and identify the associated risks and hazards
- identify and summarise the regulations and standards that govern the generation of RF and EMR
- identify the relevant statutory and regulatory requirements relating to working safely with RF EMR
- describe the organisational control processes for managing exposure to RF EMR.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications – work health and safety field of work and include access to:

- induction procedures and requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- relevant regulations, standards, specifications and manuals, including industry related systems information.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2

MEM30031A Operate computer-aided design (CAD) system to produce basic drawing elements

Modification History

Release 1 - New unit of competency

Unit Descriptor

This unit of competency covers the skills and knowledge required to apply functions of computer-aided design (CAD) software programs that are typically used in the production of detail drawings.

Application of the Unit

This unit is suitable for those working within a CAD or drafting work environment and may be applied across engineering and manufacturing environments. It covers competent use of a CAD program to perform basic drawing tasks used in the development of detail drawings. Drawings may include plans, diagrams, charts, circuits, systems or schematics.

This unit includes using computer equipment and selecting software functions in order to generate basic drawing elements.

Work is conducted under supervision.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of

performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Confirm drawing requirements	1.1	Confirm purpose, scope, and information and presentation requirements for drawing
		1.2	Review available information relevant to project and work requirements, and identify and address further information needs
		1.3	Identify computing equipment and software used in the organisation
		1.4	Identify work flow and procedures for work supervision
		1.5	Examine requirements for presentation of drawings
2	Identify key features of CAD software	2.1	Describe types of CAD software used for detail drafting, their key features and suitability for producing specific drawing outcomes
		2.2	Describe types of CAD software used for design drafting, their key features and suitability for producing specific drawing outcomes
		2.3	Identify differences in CAD process to generate 2-D drawings and 3-D models, and reasons for each presentation
		2.4	Identify differences in CAD process to generate single and multiple view drawings, and reasons for each presentation
		2.5	Identify CAD software used in the organisation and confirm compatibility with other software programs and peripheral equipment
		2.6	Identify software features for linked specifications, catalogues or materials ordering
3	Access software and set up for	3.1	Open software and navigate organisational filing and library system

	drawing work	3.2	Identify organisational and software templates and determine uses
		3.3	Identify organisational symbols, codes and standards to be applied in drafting work and how these are accessed and applied
		3.4	Apply workplace procedures to retrieve and manipulate required information and navigate computing technology
		3.5	Set up working environment
4	Produce basic drawing elements	4.1	Use CAD functions to produce basic drawing elements
		4.2	Use editing and transfer tools and methods to modify drawing elements
		4.3	Apply dimensions, text and symbols to drawing elements
		4.4	Import and export files into/out of working space
		4.5	Generate different views and perspectives
		4.6	Organise presentation of work
5	Complete CAD operations	5.1	Save and file drawing elements according to organisational procedures
		5.2	Print drawing elements and evaluate presentation
		5.3	Evaluate work and identify areas for improvement
		5.4	Close applications, perform CAD housekeeping and maintain organisational filing system

Required Skills and Knowledge

Required skills

Required skills include:

- literacy skills sufficient to read instructions for drawings work

- using computer technologies and navigating software
- numeracy skills sufficient to interpret technical information and determine scaling and layout issues
- navigating software to:
  - manipulate drawing entities
  - modify dimension styles
  - create and use layers
  - manipulate the drawing origin
  - define and utilise symbol libraries
  - utilise grids/grid snaps and object snaps
  - display views at multiple scales
  - add title blocks/frame to layout a drawing for printing
  - prepare advanced drawings in plane orthogonal or equivalent
  - set up prototype drawings
  - define and extract attribute data
  - create bills of materials (BOM) utilising attribute data and third-party application software

Required knowledge

Required knowledge includes:

- general knowledge of different approaches to drawing
- awareness of copyright and intellectual property issues and legislation in relation to drawing
- environmental and occupational health and safety (OHS) issues associated with the tools and materials used for drawing
- quality assurance procedures
- CAD program capabilities and processes

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria required skills and knowledge range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	A person who demonstrates competency in this unit must be able to use CAD software to produce graphics commonly used in drafting work.
Critical aspects for assessment and evidence required to demonstrate competency in this	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required

unit	knowledge, and be capable of applying the competency in new and different situations and contexts. Specifically the candidate must be able to: • work within typical site/teamwork structures and methods • apply worksite communication procedures • comply with organisational policies and procedures, including quality requirements • participate in work meetings • comply with quality requirements • use industry terminology • apply appropriate safety procedures • identify drawing work requirements and determine appropriate software functions and features • identify features and uses of CAD software used in detail and design drafting • access and use computing equipment and CAD software functions to produce drawing elements.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with drafting or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways, including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Range Statement

CAD software	CAD software may include: • AutoCAD • Inventor • Revitt • Solidworks • ProSteel • XSteel • other programs
Key features	Key features may include: • 2-D • 3-D modelling • built-in specifications • file import/export • save • undo • scale
Specific drawing outcomes	Specific drawing outcomes may include • 2-D • 3-D modelling • drawings for specific engineering applications • orthographic/isometric/perspectives/schematics
Basic drawing elements	Basic drawing elements may include: • points, line angles, circles, arcs, planes, figures

	and solids • squares, rectangles and triangles • bisected lines and dividing lines • polygon, ellipse, spline, dimension and hatch
Editing and transfer tools and methods	Editing and transfer tools and methods may include: • delete, fillet, chamfer, erase, trim/extend, break, undo and redo commands • zooming and panning • moving, copying, rotating and mirroring • polar and rectangular duplication • object snaps • dimensions • selecting entities • dividing • scaling • measuring • grouping

Unit Sector(s)

Drawing, drafting and design

Custom Content Section

Not applicable.

MEM30033A Use computer-aided design (CAD) to create and display 3-D models

Modification History

Release 1 - New unit of competency

Unit Descriptor

This unit of competency covers using a computer-aided design (CAD) program to produce and plot basic 3-D view drawings.

Application of the Unit

This unit applies to the production of 3-D models using CAD software and associated equipment. This will include the use of region and solid modelling techniques, section views and pre-drawn library files. Work also includes extraction of properties and application of basic rendering techniques.

All work is conducted under supervision.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Pre-Requisites

MEM30031A Operate computer-aided design (CAD) system to produce basic drawing elements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of

performance is to be consistent with the evidence guide.

Elements and Performance Criteria

1	Confirm drawing requirements	1.1	Confirm purpose, scope and information and presentation requirements for drawing
		1.2	Identify, interpret and analyse available information relevant to project and work requirements, and identify and address further information needs
		1.3	Identify computing equipment and software used in the organisation
		1.4	Identify work flow and procedures for work supervision and confirm communication requirements through project
		1.5	Examine requirements for presentation of drawings
2	Create and display 3-D views	2.1	Set up a 3-D environment on the screen to allow multiple viewing
		2.2	Create 3-D views on the screen by manipulation of drawing planes and insertion of 3-D geometric shapes
		2.3	Draw on any plane of the 3-D view
		2.4	Use editing functions to modify 3-D geometric shapes in creating 3-D views
		2.5	Produce wire line, surface and solid face displays in isometric, perspective and orthographic projections
3	Detail 3-D model	3.1	Extract the mass and surface area of a given solid model made from a nominated material
		3.2	Apply basic rendering techniques to render solid model to a specified set of criteria
4	Save completed	4.1	Save file in an appropriate format to enable retrieval and

drawing file in various formats		use in a CAD system
	4.2	Save file in other formats to enable retrieval in other software applications

Required Skills and Knowledge

Required skills

Required skills include:

- reading and interpreting engineering specifications
- organising information
- using computer and peripherals
- using CAD program
- saving 3-D modes in various file formats
- preparing drawings in plane orthogonal, isometric projection or equivalent

Required knowledge

Required knowledge includes:

- region modelling techniques
- solid modelling techniques
- development of sectioned models
- use of cutting plane
- use of cross hatching
- use of pre-drawn library files and primitives to produce a 3-D model
- use of third level software to produce 3-D models
- how to extract mass and area properties
- how to extract area properties from region models
- application of basic rendering techniques to a 3-D model

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria required skills and knowledge range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	A person who demonstrates competency in this unit must be able to use CAD to create and display 3-D models.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts. Specifically the candidate must be able to: • work within typical site/teamwork structures and methods • apply worksite communication procedures • comply with organisational policies and procedures, including quality requirements • participate in work meetings • comply with quality requirements • use industry terminology • apply appropriate safety procedures • identify modelling work requirements and determine appropriate software functions and features • apply CAD functions to produce a rendered 3-D model to Australian Standard (AS) 1100.101–1992 Technical drawing – General principles.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with using CAD to create and display 3-D models or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways, including direct observation, supervisor's reports, project work,

	samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

Range Statement

Multiple viewing	Multiple viewing includes: • top views • front and side views • general 3-D view
3-D geometric shapes	3-D geometric shapes may include: • arcs and lines • spheres • cones • cylinders • boxes

Unit Sector(s)

Drawing, drafting and design

Custom Content Section

Not applicable.

NWPCAD004 Maintain catchment and surrounding areas

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to maintain catchment and surrounding areas.

It includes maintaining surface catchment areas and associated rivers, lakes, water bodies, dams, water storages and groundwater areas whilst contributing to the maintenance of water quality, protection of the environment and public. It also includes maintaining environmental conditions, undertaking maintenance and reporting outcomes.

This unit applies to those working as field staff with specific responsibility for maintaining catchment and surrounding areas and contributing to catchment management and control. Those undertaking this unit would work under appropriate supervision either independently or in a team, while performing routine tasks in range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Catchment and Dams

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for work	**1.1** Access and review catchment records describing

			maintenance requirements for action
		1.2	Identify and follow work requirements and timelines for performing maintenance tasks of catchments and surrounding areas
		1.3	Assess site, equipment and methods for risks and apply appropriate control measures
		1.4	Plan maintenance work to be conducted within required timeframe, using allocated resources
2	**Maintain environmental condition of waterways and surrounding areas**	**2.1**	Remove and dispose of dead livestock or native fauna from waterways and surrounding catchments
		2.2	Remove flood debris from waterways and surrounding areas according to workplace procedures
		2.3	Carry out fuel reduction burns according to workplace procedures
		2.4	Apply control measures to contain or control chemical spills or contaminated water supplies
		2.5	Identify and report potential or emerging changes to environmental conditions to relevant personnel
		2.6	Identify procedures for responding to emergencies and providing security to the catchment area
3	**Eradicate noxious weeds and feral pests**	**3.1**	Identify and report noxious weeds and feral pests contributing to degradation of catchment and surrounding areas to relevant personnel
		3.2	Organise for the removal of noxious weeds and feral pests
		3.3	Identify and report observations outside defined parameters to relevant personnel for further action
		3.4	Compile reports on eradication process and submit to relevant personnel
		3.5	Monitor and report activities within the catchment area to relevant personnel
4	**Perform maintenance within catchment area**	**4.1**	Identify and inspect infrastructure requiring minor maintenance

4.2 Apply erosion control measures for waterways and surrounding areas

4.3 Make repairs using appropriate tools, equipment and resources according to workplace procedures

4.4 Record and report maintenance performed to relevant personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU011 Maintain catchment and surrounding areas.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPCAD004 Maintain catchment and surrounding areas

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- compiling reports
- controlling pests
- identifying and responding to maintenance problems
- inspecting catchment and surrounds
- interpreting work requirements
- monitoring and reporting environmental conditions
- performing minor maintenance tasks
- removing debris, noxious weeds

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- catchment emergency response and catchment security procedures
- effects of weather and conditions on operation of site or plant
- environmental, landscape and ground structure of work area
- flood debris
- illegal activities including:
  - camping
  - illegal crops
  - logging
  - mining
  - off-road vehicles
  - shooting
- infrastructure including:
  - bridges
  - culverts
  - drains

  - fences
  - flow recording stations
  - gates
  - recording stations
- relevant legislation, regulations and workplace procedures
- risk factors and potential hazards of surface water systems

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPCAD019 Monitor and operate groundwater extraction

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and operate groundwater extraction.

It includes monitoring the extraction of water from waterways and water bodies and reporting risks, compliance and complaints. It also includes operating pumps and meters, monitoring availability and quality of supply, controlling water flows from the source and applying legislative and workplace requirements.

This unit applies to field staff with responsibility for ensuring water extraction complies with water use legislation. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Catchment and Dams

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for work	**1.1** Interpret relevant legislation, workplace procedures and requirements

	1.2	Locate bore sites from plans and job specifications
	1.3	Schedule and plan inspection of bore asset and communicate with appropriate personnel
	1.4	Select, check and prepare equipment to monitor water extraction
	1.5	Conduct a risk assessment of bore operations and determine control measures
2 Monitor and operate groundwater extraction systems	**2.1**	Monitor designated locations within groundwater source area according to agreed schedule
	2.2	Conduct inspection of bore assets, take meter readings and for water depth
	2.3	Calculate recharge and extraction rates
	2.4	Collect samples and conduct standard tests according to workplace procedures
	2.5	Adjust pump flows to meet customer orders
	2.6	Identify breaches according to legislation and workplace procedures
3 Identify and report risks, breaches and complaints	**3.1**	Identify risks to stakeholders and environment
	3.2	Identify and report breaches according to workplace procedures
	3.3	Investigate and report complaints from the stakeholders regarding water allocation and quality

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU051 Monitor and operate groundwater extraction.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPCAD019 Monitor and operate groundwater extraction

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- adjusting pump flows
- calculating recharge and extraction rates
- collecting samples
- conducting risk assessment
- identifying and preventing well contamination
- inspecting bore assets
- interpreting plans, instructions and standard operating procedures
- reading levels and meters

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- characteristics of groundwater and aquifer
- characteristics of groundwater systems
- effects of weather and conditions on operation of site or plant
- methods for investigating and reporting complaints
- risk factors and potential hazards of groundwater source systems
- relevant legislation, regulations and workplace procedures
- system hydraulics and flushing
- system layout
- types of bore construction and principles
- water extraction equipment including operation, capacity and limitations
- well contaminants

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPGEN017 Apply the risk management principles of the water industry standards, guidelines and legislation

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to apply the risk management principles of the water industry standards, guidelines and legislation.

It includes identifying relevant guidelines of the water industry, describing risk management principles for the control of contaminants in the water cycle, applying principles to work context and reviewing and evaluating water quality management principles. It also includes complying with risk management principles established in relevant guidelines for the water industry which contribute to the improved management of water supply systems and the reduction of water quality risks.

This unit supports the attainment of skills and knowledge required for those working in all roles in the water industry. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a range of contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

outcomes.	demonstrate achievement of the element.
1 Identify relevant guidelines of the water industry	**1.1** Identify and follow relevant guidelines and legislative requirements
	1.2 Identify the key features and elements or relevant water guidelines
2 Identify risk management principles for control of contaminants in the water cycle	**2.1** Identify the main components of workplace water systems
	2.2 Identify relevant risks and hazards utilising workplace risk management principles
	2.3 Identify the general function of controlling contaminants in the water system with the use of multiple barrier principles
3 Apply principles to work context	**3.1** Identify requirements for the workplace water quality management plan
	3.2 Identify the links between the regulatory framework and work practices
	3.3 Apply the principles to work practices
	3.4 Follow workplace procedures for recording water quality incidents
	3.5 Participate in continuous improvement of work practices to achieve water quality outcomes

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPGEN001 Apply the risk management principles of the water industry standards, guidelines and legislation.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPGEN017 Apply the risk management principles of the water industry standards, guidelines and legislation

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- accessing and interpreting risk management principles
- completing workplace documentation of water quality incidents
- identifying risk control measures
- identifying the main functions of a water supply system
- listing the requirements of risk management plans
- maintaining records of water quality incidents
- undertaking hazard identification and risk assessment on a specific project or worksite.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- chronic and acute health impacts from human exposure to contiminants in water
- principles of relevant guidelines
- relationship between guidelines, water quality management plans and work practices
- relationships between guidelines and state and territory regulatory requirements
- relevant legislation, regulations and workplace procedures
- water cycle
- water quality risk assesssment and contol procedures
- water quality risk factors and performance indicators
- workplace risk management procedures

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory

requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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NWPGEN020 Sample and test source or drinking water

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to sample and test source or drinking water.

It includes preparing for and conducting worksite source and treated water quality sampling and testing. It also includes reporting abnormal findings and finalising work. This unit does not include off-site laboratory testing.

This unit applies to those working in field operations in various industries. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for water quality sampling and testing	**1.1** Determine work requirements from standard operation procedures
	1.2 Confirm and record samples, locations and tests to

		comply with requirements
	1.3	Select and check relevant equipment and tools to meet tasks and safety requirements
	1.4	Select and apply relevant sample preservation methods
	1.5	Select, fit and use personal protective equipment according to workplace procedures
	1.6	Limit hazards and contamination to protect self, work area and environment
2 Conduct water quality sampling and testing	**2.1**	Apply chain of custody principles according to workplace procedures
	2.2	Collect samples ensuring types, locations, times and labels comply with requirements and workplace procedures
	2.3	Prepare samples for off-site laboratory testing according to requirements
	2.4	Maintain integrity of samples during sampling and onsite testing
	2.5	Conduct worksite water quality tests according to workplace procedures and record results
	2.6	Assess and report abnormal characteristics to relevant personnel
3 Finalise work	**3.1**	Clear and restore work area
	3.2	Report observations or measurements requiring further action to relevant personnel
	3.3	Dispose of samples, clean and store test equipment according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPGEN007 Sample and test drinking water.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPGEN020 Sample and test source or drinking water

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- assessing risks
- calibrating worksite testing equipment
- collecting samples from at least one of the following:
  - source water
  - treated water
- disposing of waste and spent samples
- following sampling and testing procedures
- performing at least three of the following types of worksite tests on the collected samples:
  - chlorine
  - colour
  - dissolved oxygen
  - electrical conductivity
  - pH
  - temperature
  - turbidity
- planning and preparing for water sampling tasks
- preparing, checking and using equipment
- preparing, collecting, labelling and preserving water samples
- recording all required information

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- abnormal characteristics of water samples and test results
- chain of custody
- effects of weather and conditions on work
- hazards associated with collection of water samples

- maintenance and storage of reagents
- range and purpose of on worksite water quality testing and sampling
- requirements for maintaining sample integrity
- sample types for the following tests:
  - chemical
  - microbial
  - physical
  - radiological
- water sample preparation
- workplace policies and procedures

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPGEN021 Sample and test wastewater

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to sample and test wastewater.

It includes preparing for and conducting wastewater sampling and testing and finalising work. It also includes collecting and preparing wastewater samples and performing wastewater tests. This unit does not include off-site laboratory testing.

This unit applies to those working in field operations in industries. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a range of familiar contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for wastewater sampling and testing	**1.1** Determine work requirements from standard operating procedures
	1.2 Confirm and record samples, locations and tests to

		comply with requirements
	1.3	Select and check and relevant equipment and tools to meet tasks and safety requirements
	1.4	Select and apply relevant sample preservation methods
	1.5	Select, fit and use personal protective equipment according to workplace procedures
2 Conduct wastewater sampling and testing	**2.1**	Apply chain of custody principles according to workplace procedures
	2.2	Collect samples ensuring types, locations, times and labels comply with requirements and workplace procedures
	2.3	Prepare samples for off-site laboratory testing according to requirements
	2.4	Maintain integrity of samples during sampling and worksite testing
	2.5	Conduct worksite wastewater quality tests according to workplace procedures and record results
	2.6	Assess and report abnormal characteristics to relevant personnel
3 Finalise work	**3.1**	Clear and restore work area according to workplace procedures
	3.2	Report observations or measurements requiring further action to relevant personnel
	3.3	Dispose of samples, clean and store test equipment according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPGEN008 Sample and test wastewater.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPGEN021 Sample and test wastewater

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- assessing risks
- calibrating worksite testing equipment
- collecting samples from at least one of the following:
  - effluents
  - raw wastewater
  - reclaimed water
  - sludges
- disposing of waste and spent samples
- following sampling and testing procedures
- performing at least three of the following types of worksite tests on the collected samples:
  - dissolved oxygen
  - electrical conductivity
  - foaming
  - microscopic observations
  - odours
  - pH
  - redox potential
  - settleability
  - sludge blanket depth
  - temperature
  - visual observations
- planning and preparing for wastewater sampling tasks
- preparing, checking and using equipment
- preparing, collecting, labelling and preserving wastewater samples
- recording all required information

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- abnormal characteristics of wastewater samples and test results
- chain of custody
- effects of weather and conditions on work
- hazards associated with collection of wastewater samples
- maintenance and storage of reagents
- range and purpose of worksite wastewater testing and sampling
- requirements for maintaining sample integrity
- sample collection methods:
  - composite
  - grab
- sample types for the following tests:
  - chemical
  - microbial
  - physical
- wastewater sample preparation
- workplace policies and procedures

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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NWPGEN023 Use maps, plans, drawings and details

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to use maps, plans, drawings and details.

It includes reading and interpreting maps, plans, drawings and specifications and recording and advising on changes and errors.

This unit applies to those using maps, plans and drawings in industry. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a range of contexts.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Interpret maps, plans, drawings and specifications	**1.1** Identify and locate maps, plans, drawings and specifications required to complete work tasks
	1.2 Interpret commonly used symbols and abbreviations

			according to the drawing standards
		1.3	Interpret, apply and verify the latest version and functions of the legend
		1.4	Identify natural and constructed features on maps, plans and drawings
		1.5	Identify specifications to maps, plans and drawings
2	**Use maps, plans and drawings**	**2.1**	Implement technical data according to workplace procedures
		2.2	Use scales to calculate distances using maps and plans
		2.3	Confirm orientation, boundaries and identified features of the worksite
		2.4	Identify any errors in the maps, plans, drawings and specifications and report to relevant personnel
3	**Record and advise on changes and errors**	**3.1**	Amend a map or plan according to workplace procedures
		3.2	Take measurements and record features on a map or drawing
		3.3	Record and report amendments to relevant personnel

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPGEN011 Use maps, plans, drawings and specifications.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPGEN023 Use maps, plans, drawings and details

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- adjusting a map or plan representing an actual or simulated work environment including the following:
  - constructed features
  - natural features
  - symbols
- identifying errors in maps, plans, drawings and specifications locating maps, plans, drawings and specifications for work tasks
- locating worksites and boundaries
- using information provided in maps, plans and drawings to complete a task

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- features of maps, plans and drawings including:
  - contours
  - datum points
  - dimensions
  - gradients
  - constructed
  - natural
  - planes
  - sections
  - symbols
  - terminology
- formulas of volumes, area and mass
- range of maps, plans and drawings to different assignment situations
- relevant legislation, regulations and workplace procedures

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPGEN027 Monitor and operate pump stations

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and operate pump stations.

It includes pump stations in water and wastewater systems, undertaking minor maintenance or organising more complex maintenance. It also includes gland adjusting, packing replacement and replacing fittings.

This unit applies to staff with specific responsibility for ensuring pump stations operate according to workplace procedures. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a familiar context, ensuring minimal damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

General

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare work	**1.1** Determine pump station work requirements from standard operating and maintenance procedures

		1.2	Perform worksite inspection to prevent damage to other utilities and the environment
		1.3	Select and check equipment and tools to meet task and safety requirements
		1.4	Select, fit and use personal protective equipment according to workplace procedures
		1.5	Handle, use and store chemicals according to safety data sheet and workplace procedures
2	**Operate pump stations**	**2.1**	Identify and set or adjust pump station components
		2.2	Perform routine security inspections and cleaning duties according to workplace procedures
		2.3	Operate pump station according to manufacturer instructions
3	**Maintain pump stations**	**3.1**	Inspect pump station components, identify maintenance needs and report to relevant personnel
		3.2	Schedule maintenance tasks, order appropriate materials and conduct maintenance tasks according to maintenance schedule
		3.3	Identify and report pump station faults and perform minor repairs
4	**Monitor and adjust pump station performance**	**4.1**	Apply pump station performance targets
		4.2	Identify and apply monitoring points and timing
		4.3	Monitor pump station and adjust to maintain operational parameters
		4.4	Identify and report observations outside defined parameters to relevant personnel for further action
5	**Check outsourced maintenance work**	**5.1**	Check completed maintenance and repairs meet specifications
		5.2	Return pumping station to service
6	**Finalise work**	**6.1**	Check, maintain and store equipment, tools and materials and report defects to relevant personnel

6.2 Restore worksite according to environmental and workplace procedures

6.3 Maintain workplace records according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPSOU054 Monitor and operate pump stations.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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Assessment Requirements for NWPGEN027 Monitor and operate pump stations

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- checking quality of outsourced maintenance work
- collecting data
- conducting a security inspection
- finalising work, including completing documentation
- following plans and instructions
- identifying system faults, operational problems and hazards
- maintaining workplace records
- monitoring and adjusting pump station performance
- operating and maintaining pumps and pumping stations
- operating service
- planning and preparing for work, including selecting equipment and chemicals
- producing reports and logs
- responding to operational problems
- using safety and personal protective equipment
- using tools, equipment and machinery.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- control systems
- effects of weather and conditions on system including lightning strikes
- environmental aspects of operation
- equipment operation, capacity and limitations
- hazardous materials handling
- high and low voltage requirements
- lock-out procedures for mechanical and electrical installations
- principles affecting selection of pump station monitoring points and timing of monitoring

activities
- principles and purpose of pump operation
- pump and pump station operation and maintenance procedures and standards
- pump station components
- relevant legislation, regulations and workplace procedures
- relevant utilities and service bodies
- risk factors and potential hazards of operating wastewater transfer systems
- system hydraulics including suction and lift
- system layout
- types of pump and their operational function
- work, health and safety (WHS) requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

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NWPNET020 Control electrical risk on metallic pipes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to control electrical risk on metallic pipes.

It includes safely working on and assessing metallic pipes for electricity. It also includes using electrical detection devices, identifying yourself to customers and identifying utility assets.

This unit applies to those working as field and operational staff with responsibility for the control measures of high-risk electrical hazards. Those undertaking this unit would work independently under indirect supervision while performing routine tasks with a moderate level of complexity in a familiar context.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Networks

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for work	**1.1** Identify and locate area of work from job specifications, plans and diagrams
	1.2 Conduct risk assessment for environmental safety

		according to workplace procedures
	1.3	Select safety and electrical equipment and fit and use personal protective equipment according to workplace procedures
	1.4	Identify yourself to your customers and determine customer needs
	1.5	Identify utility assets or services by contacting relevant authorities
2 Assess metallic pipes for electricity	**2.1**	Use electrical testing device to check for presence of electricity on metallic water pipe according to workplace procedures
	2.2	Follow organisational procedures when electricity is detected
	2.3	Identify and clean attachment points and apply the testing and monitoring equipment and bridging conductors if no electricity is detected
	2.4	Continue to enforce electrical control measures during pipe replacement
3 Finalise work	**3.1**	Store and secure equipment and materials according to manufacturer instructions
	3.2	Restore worksite to meet environmental and organisational requirements
	3.3	Report and tag any damaged or faulty equipment according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPNET003 Control electrical risk on metallic pipes.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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Assessment Requirements for NWPNET020 Control electrical risk on metallic pipes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- applying bridging conductors
- contacting relevant authorities for the correct location of utilities or services
- identifying and selecting appropriate equipment
- reading plans and diagrams
- replacing metallic pipe according to manufacturer or workplace requirements
- testing of bridging conductors
- using electrical testing and monitoring safety devices

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- customer service procedures
- electrical testing
- equipment operation, capacity and limitations
- excavation procedures and site restoration
- metallic pipes including:
  - cast iron
  - copper pipe
  - ductile iron
  - galvanised pipe
  - mild steel
- relevant legislation, regulations and workplace procedures
- relevant authorities to contact for the correct location of utilities or services including Dial Before You Dig
- risk factors and potential hazards associated with metallic pipes

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPNET036 Perform leak detection

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to perform leak detection.

It includes planning leak detection activities and locating, identifying and reporting leaks in pressure mains water distribution networks.

This unit applies to those working as field staff with a specific responsibility for planning and implementing leak detection activities. Those undertaking this unit would work under appropriate supervision, while performing routine tasks in a familiar context, and ensuring minimum damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Networks

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for leak detection	**1.1** Determine worksite boundaries and leak detection requirements from plans, specifications and instructions
	1.2 Conduct risk assessment for environmental and safety

		factors including personal and protective equipment to ensure it is safe to commence work
	1.3	Select and check leak detection equipment according to workplace procedures
	1.4	Determine work requirements for the maintenance and repair of assets from work drawings, plans, specifications and instructions
	1.5	Identify, notify and communicate with customers according to workplace procedures
2 Operate leak detection equipment	**2.1**	Determine and mark worksite boundaries from plans and service search diagrams
	2.2	Operate leak detection equipment according to manufacturer instructions
	2.3	Mark the location of leaks according to workplace procedures
	2.4	Locate leaks and arrange repair according to testing outcomes, relevant legislation and workplace procedures
3 Review, report and record work	**3.1**	Restore worksite according to environmental and workplace procedures
	3.2	Store equipment, tools and materials according to manufacturer and workplace procedures
	3.3	Complete and process workplace records according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPNET015 Perform leak detection.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPNET036 Perform leak detection

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- analysing data according to workplace procedures
- completing documentation
- identifying safety risks and hazards
- interpreting plans, specifications, policies and procedures
- locating and marking leaks and arranging repair activities
- locating, identifying and reporting leaks in water distribution networks
- operating leak detection equipment
- preparing for leak detection activities
- providing maintenance records for equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- calculations and measurements
- landscape and ground structure of work area
- leak detection equipment
- relevant legislation, regulations and workplace procedures
- relevant utilities and service bodies
- risk assessment and the identification of potential hazards including:
  - effects of weather and conditions on site or plant
  - environmental aspects
  - equipment operation, capacity and limitations
  - identification, repair and lock out procedures
- system hydraulics
- system layout
- work drawings, plans and specifications

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPNET038 Install metering equipment

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to install metering equipment.

It includes preparing, reading, installing and maintaining flow control metering equipment. It also includes finalising work, restoring worksite and completing documentation.

This unit applies to those working as field staff with responsibility for installing meter equipment in compliance with relevant workplace and statutory requirements. Those undertaking this unit would work under appropriate supervision while performing routine tasks, in a familiar context and ensuring minimum damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Networks

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for installing metering equipment	**1.1** Conduct environmental and work, health and safety risk assessment according to workplace procedures
	1.2 Determine work requirements and worksite from plans,

			specifications and instructions
		1.3	Check permission to access third-party sites, isolations and permits to work with relevant personnel
		1.4	Conduct earth leakage risk assessment according to workplace procedures
		1.5	Identify, check and prepare materials, equipment and resources required to satisfy job plan
		1.6	Identify metering equipment and recognise specifications for operation
		1.7	Select safety equipment and fit and use personal protective equipment (PPE)
		1.8	Present identification to customers and organise arrangements to complete repairs
		1.9	Select and use earth leakage safety equipment to metallic pipe for installing meters
2	**Read metering equipment**	**2.1**	Collect and report information on the performance of the metering equipment
		2.2	Identify potential faulty meters and apply workplace procedures
3	**Install flow control and metering devices**	**3.1**	Apply earth leakage safety equipment to metallic pipe according to workplace procedures
		3.2	Isolate water flow according to workplace requirements and procedures
		3.3	Install new meter or replace existing meter according to manufacturer instructions
		3.4	Restore water flow, check for leaks and meter is operating according to manufacturer instructions
		3.5	Remove earth leakage safety equipment and restore worksite
4	**Maintain flow control and metering devices**	**4.1**	Inspect flow control and metering facilities in water distribution
		4.2	Complete preventative maintenance and service equipment and facilities according to workplace procedures

5	**Finalise work and complete documentation**	**5.1** Review, record and report work according to workplace procedures
		5.2 Restore worksite, complete and submit workplace records
		5.3 Check, maintain, store equipment, tools, materials and tag and report faulty equipment according to workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPNET021 Install metering equipment.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPNET038 Install metering equipment

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- completing workplace documentation
- conducting risk assessments on worksite for operational, electrical and environmental safety factors
- conducting inspections, maintenance and servicing of metering, flow control and regulating devices
- identifying yourself to customers
- identifying and responding to operational problems
- installing and testing metering equipment
- installing flow control and metering devices
- installing, replacing and securing volumetric metering equipment for domestic, industrial and commercial premises
- interpreting plans, specifications and instructions for installation of flow control and metering devices
- preparing for installation of flow control and metering devices
- producing documentation
- using electrical safety procedures
- using personal protective equipment

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- data collection and recording system
- electrical earth leakage safety procedures
- environmental, landscape and ground structure of work area for restoration
- equipment operation, capacity and limitations
- flow measurement principles and procedures
- materials handling
- meter types

- relevant legislation, regulations and workplace procedures
- relevant utilities and service bodies
- risk factors and potential hazards
- system layout
- work in confined spaces and at heights

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPNET039 Maintain and repair network assets for drinking water

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to maintain and repair network assets for drinking water.

It includes conducting maintenance and repairs on a variety of water distribution assets including storages, pumping stations, dosing stations and pipelines. It also includes reviewing, reporting and recording work.

This unit applies to those working as field staff with specific responsibility for ensuring the repair and maintenance of water assets. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, in a familiar context, and ensuring minimum damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Networks

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1	**Prepare for work**	**1.1**	Conduct risk assessment for environmental, safety and water quality factors to ensure worksite is safe to work
		1.2	Determine work requirements, materials and configuration from plans, specifications, instructions and workplace procedures
		1.3	Check coordination issues with relevant personnel, including isolations, licences and permits to work
		1.4	Identify networks system operation requirements
		1.5	Identify, notify and communicate with customers according to workplace procedures
		1.6	Select, fit and use personal protective equipment (PPE)
2	**Conduct maintenance and repairs**	**2.1**	Isolate infrastructure according to workplace procedures
		2.2	Determine appropriate repair method from job specifications and instructions
		2.3	Ensure materials, pipes and fittings are appropriately disinfected prior to installation
		2.4	Check maintenance and repairs to assets to ensure specifications are met according to workplace procedures
		2.5	Restore worksite according to environmental and workplace procedures including performing calculations
3	**Review and report work**	**3.1**	Tag and report faulty equipment and tools and advise appropriate personnel
		3.2	Store equipment, tools and materials according to manufacturer and workplace instructions

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work

environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPNET022 Maintain and repair network assets for drinking water.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPNET039 Maintain and repair network assets for drinking water

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- applying disinfection according to workplace procedures
- assisting with worksite planning including personnel, equipment and materials
- checking permits, approvals, other utilities diagrams and maps with relevant personnel
- communicating with appropriate personnel and customers
- conducting risk assessment on worksite for safety and environmental factors
- determining location, size, utilities, services from plans, specifications and workplace procedures
- ensuring system hygiene and water quality
- interpreting plans, instructions and procedures
- maintaining and repairing assets
- performing work-related calculations
- selecting and applying appropriate PPE
- using appropriate tools and equipment for work to be undertaken

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- characteristics of pipe materials
- concrete placement techniques including compaction
- control system procedures
- disinfection of systems and chemical usage
- effects of weather and conditions on construction worksite or plan
- environmental, health aspects and impacts
- equipment operation, capacity and limitations
- excavation techniques and requirements
- ground support systems
- landscape and ground structure of work area

- lockout procedures
- pipe systems and installation requirements
- relevant legislation, policies and procedures
- relevant utilities and service bodies to identify allocation of road reserve
- risk factors and potential hazards of maintenance processes
- safety data sheets
- system hydraulics
- testing and sampling processes
- workplace drawings, plans, specifications and instructions

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPNET040 Maintain and repair network assets for wastewater

Modification History

Release 2. Alteration to PE item 9, removal of PE item 12 and alteration to KE point 15.

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to maintain and repair network assets for wastewater.

It includes conducting maintenance and repair on a variety of wastewater distribution assets including pipes, drains and wastewater collection assets. It also includes reviewing, reporting and recording work.

This unit applies to those working as field staff with specific responsibility for ensuring repair and maintenance of wastewater assets is completed in a safe and timely manner. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, in a familiar context, and ensuring minimum damage to the environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Networks

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for work	**1.1** Conduct risk assessment for environmental and safety factors to ensure worksite is safe to work
	1.2 Determine work requirements, materials and configuration from plans, specifications, instructions and workplace procedures
	1.3 Check coordination issues with relevant personnel, including isolations, licences and permits to work
	1.4 Identify networks system operation requirements
	1.5 Identify, notify and communicate with customers according to workplace procedures
	1.6 Select, fit and use personal protective equipment (PPE)
2 Conduct maintenance and repairs	**2.1** Isolate infrastructure according to workplace procedures
	2.2 Determine appropriate repair method from job specifications and instructions
	2.3 Check maintenance and repairs to assets to ensure specifications are met according to workplace procedures
	2.4 Restore worksite according to environmental and workplace procedures including performing calculations
3 Review and report work	**3.1** Tag and report faulty equipment and tools and advise appropriate personnel
	3.2 Store equipment, tools and materials according to manufacturer and workplace instructions

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPNET023 Maintain and repair network assets for wastewater.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPNET040 Maintain and repair network assets for wastewater

Modification History

Release 2. Alteration to PE item 9, removal of PE item 12 and alteration to KE point 15.

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- assisting with planning worksite including personnel, equipment and materials
- checking permits, approvals, other utilities diagrams and maps with relevant personnel
- communicating with appropriate personnel and customers
- conducting risk assessment on worksite for safety and environmental factors
- determining location, size, utilities, services from plans, specifications and workplace procedures
- identifying and responding to operational problems including main, connection chokes, pump stations and faults
- interpreting plans, instructions and procedures
- maintaining and repairing assets by:
  - maintaining pump stations
  - repairing access chambers
  - undertaking excavation
- maintaining, repairing and replacing wastewater infrastructure including at least 5 of the following:
  - clearing blockages
  - controlling flows in gravity networks
  - installing connections
  - installing pipes and fittings
  - jet cleaning
  - jet foaming
  - locating and repairing chokes
  - making joints
  - measuring and cutting pipes
  - repairing valves
  - selecting and placing bedding and backfill material
  - undertaking closed-circuit television (CCTV) inspection

    - undertaking excavation
- performing work-related calculations
- preserving personal safety
- selecting and applying appropriate PPE
- using tools and equipment for work in wastewater

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- causes of blockages including:
    - foreign objects
    - pipe displacements
    - roots intrusion
- characteristics of pipes and fittings
- concrete placement techniques including compaction
- control system procedures
- effects of weather and conditions on construction site or plant
- environmental, health aspects and impacts
- equipment operation, capacity and limitations
- excavation techniques and requirements
- formwork preparation and positioning
- ground support systems
- infiltration of foreign matter into the wastewater system
- landscape and ground structure of work area
- lockout procedures
- pipe systems and installation requirements
- relevant legislation, regulations, policies and procedures
- relevant utilities and service bodies to identify allocation of road reserve
- risk factors and potential hazards of maintenance processes
- safety data sheets
- system hydraulics
- testing and sampling systems
- work drawings, plans, specifications and instructions

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the

time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

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NWPTRT005 Monitor and operate water treatment processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to monitor and operate water treatment processes.

It includes reporting on water treatment plant system performance and processing quality control. It also includes operating water treatment processes, and complying with relevant legislation, regulations and guidelines.

This unit applies to operational staff in water treatment plants with responsibility for the practical and safe operation of plant, equipment and processes. Those undertaking this unit would work under appropriate supervision, while performing routine tasks, within a familiar context.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for work	**1.1** Determine work requirements from job specifications and plans

		1.2	Select and check equipment required to meet safety requirements of task and worksite
		1.3	Select, fit and use required safety equipment, including personal protective equipment (PPE)
2	**Monitor and operate treatment processes**	**2.1**	Inspect plant according to workplace procedures
		2.2	Collect process samples and conduct standard tests according to workplace procedures
		2.3	Operate treatment processes according to workplace procedures
		2.4	Perform adjustments to enhance system performance
3	**Complete documentation**	**3.1**	Collect, record and complete process data according to workplace procedures
		3.2	Identify and report observations outside defined parameters to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT001 Operate and control water treatment processes.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPTRT005 Monitor and operate water treatment processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- applying workplace procedures
- collecting and labelling samples
- collecting and recording data
- completing documentation
- conducting routine plant inspections
- performing disinfection processes
- performing water treatment separation processes
- preparing and applying chemical dosing.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of:

- demands and uses of water, both domestic and industrial
- interpreting safety data sheets
- physical, chemical and microbiological characteristics of water
- post-treatment processes
- pre-treatment processes
- reasons for water treatment
- relevant legislation, regulations and workplace procedures
- relevant technologies for operating and controlling water treatment processes
- relevant water treatment guidelines and standards
- risk factors and potential hazards associated with the operation of water treatment processes
- risk management principles
- sources of water
- types of chemicals and water chemistry
- types of treatment plants and processes
- water and chemical principles

- water cycle.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

NWPTRT027 Monitor and operate wastewater treatment processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Application

This unit involves the skills and knowledge required to operate and control wastewater processes.

It includes monitoring and operating wastewater treatment plants, reporting system performance and process quality control. It also includes ensuring wastewater disposal or re-use meets state or territory legislative requirements.

This unit applies to operational staff in wastewater treatment plants with responsibility for the practical and safe operation of plant, equipment and processes. Those undertaking this unit would work under appropriate supervision, performing routine tasks within a familiar context.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Treatment

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for work	**1.1** Determine work requirements from job specifications and plans

		1.2	Select and check equipment required to meet safety requirements task and worksite
		1.3	Select, fit and use required safety equipment including, personal protective equipment (PPE)
2	**Monitor treatment processes**	**2.1**	Inspect plant according to workplace procedures
		2.2	Collect process samples and conduct standard tests according to workplace procedures
		2.3	Operate wastewater treatment processes according to workplace procedures
		2.4	Perform adjustments to enhance system performance
3	**Complete documentation**	**3.1**	Collect, record and complete process data according to workplace procedures and process requirements
		3.2	Identify, data outside of operational parameters and report to relevant personnel for further action

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to NWPTRT061 Operate and control wastewater processes.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Assessment Requirements for NWPTRT027 Monitor and operate wastewater treatment processes

Modification History

Release 1. This is the first release of this unit of competency in the NWP National Water Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes:

- applying workplace procedures
- completing documentation
- conducting routine plant inspections
- operating and adjusting at least one of the following processes:
  - primary treatment
  - secondary treatment
  - tertiary treatment
  - solids management
- taking samples and performing standard tests

Knowledge Evidence

- chemical and biological principles of wastewater treatment
- hydraulics and organic loading in wastewater plants
- physical, chemical and microbiological characteristics of wastewater treatment
- preliminary treatment, primary treatment, secondary treatment, tertiary treatment and solids management
- reasons for wastewater treatment
- relevant workplace procedures, guidelines and industry standards
- state or territory legislative requirements for wastewater treatment processes
- risk factors and potential hazards relating to wastewater treatment
- sources of wastewater
- types of components
- water cycle

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037

PUAWHS002 Maintain safety at an incident scene

Modification History

Release 1. This is the first release of this unit of competency in the Public Safety Training Package.

Application

This unit of competency involves the skills and knowledge required to recognise potential health and safety risks and to then act to eliminate or control those risks at incident scenes and to prevent injury to self, other personnel or members of the public.

The unit is applicable to public safety personnel attending an incident scene and links to the individual's duty of care responsibility to maintain personal safety and to be aware of how actions affect the safety of others including team members, other agency/organisational personnel and the public.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

The fire sector is those sections of government departments, statutory authorities or organisations that have responsibility under jurisdictional arrangements for the delivery of firefighting and fire management services.

It is essential that the prerequisite units listed below are obtained prior to the issuance of this unit to individuals within the fire sector or the units contributing to the attainment of a fire qualification.

PUAFIR210 Prevent injury

Competency Field

Work, Health and Safety

Unit Sector

Public Safety

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

outcomes.	demonstrate achievement of the element.
1 Determine hazards at incident site	**1.1** Site hazards affecting the safety of self or other personnel are identified, risks are assessed and are communicated with others at the scene
	1.2 Operational safety procedures are implemented, in accordance with organisational policies and procedures
	1.3 Duties are undertaken, in accordance with Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements
2 Implement hazard controls at incident scene	**2.1** Hazards are identified, and mitigation procedures are selected, in accordance with organisational procedures
	2.2 Control measures are applied, reported and recorded, in accordance with organisational policies and procedures
	2.3 Changes in incident situation or conditions are reported immediately to designated personnel
	2.4 Hazard controls are monitored and communicated to relevant personnel to ensure continuing effectiveness
	2.5 Hazard control and risk mitigation measures are implemented with minimum damage to the environment, whilst maintaining safety of self and others
	2.6 Incident and/or accident scene is secured to preserve the scene and maintain public safety, in accordance with organisational policies and procedures
3 Maintain personal safety	**3.1** Personal protective clothing and equipment is selected and checked, in accordance with organisational procedures, to ensure it is operational prior to entry into incident situation
	3.2 Personal protective clothing and equipment appropriate to dealing with the hazard is worn and used, in accordance with organisational procedures and manufacturers' guidelines
	3.3 Water and food intake, rest breaks and shelter requirements are maintained
	3.4 Survival techniques and/or strategies are implemented, in accordance with organisational policies, procedures

		and guidelines
4 Contribute to maintaining safety of other group members	**4.1**	Impact of own or others' actions on safety is considered and modified, as required
	4.2	Contact is maintained with group members, in accordance with organisational procedures
	4.3	Signals are correctly used, interpreted, confirmed and acted upon

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to PUAOHS002B Maintain safety at an incident scene.

Links

PUA Training Package Companion Volume Implementation Guide is found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf

Assessment Requirements for PUAWHS002 Maintain safety at an incident scene

Modification History

Release 1. This is the first release of this unit of competency in the Public Safety Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and includes

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements
- communicating using non-verbal and verbal techniques
- determining hazards and assessing risks at incident site
- following organisational policies and procedures
- implementing hazard controls at incident scene
- maintaining safety at an incident scene including personal safety and contributing to the safety of other group members
- recording information, updating records and completing documentation
- using communication equipment
- using personal protective clothing and equipment
- working with others in a team

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and includes knowledge of

- awareness of incident hazards and hazard control equipment
- commonly encountered hazards and safety precautions to prevent injury
- concept of risk
- duty of care responsibilities and obligations
- factors that may affect safety at an incident which must require monitoring
- legislation and regulations
- means of relaying warnings to other personnel
- methods of hazard control
- organisational documentation, policies and procedures
- personal protective clothing and equipment
- requirements for reporting
- roles and responsibilities at an incident scene

- safety procedures and hazard equipment to prevent injury
- survival techniques and strategies at an incident
- work environments including incidents and response situations
- Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including risk mitigation

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in industry approved simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to

- a range of relevant exercises, case studies and/or simulations
  - that demonstrate competency in maintaining personal safety and the safety of others
- relevant and appropriate materials, equipment, tools and personal protective clothing and equipment currently used in industry
- applicable documentation including organisational procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

PUA Training Package Companion Volume Implementation Guide is found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=3eca5672-6d5a-410b-8942-810d0ba05bbf

RIIHAN309F Conduct telescopic materials handler operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to conduct telescopic materials handler operations.

This unit applies to those working in site-based roles.

Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors, and must be sourced from state jurisdictions prior to applying this unit.

Unit Sector

Coal mining

Extractive

Metalliferous mining

Drilling

Civil Infrastructure

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Plan and prepare for telescopic materials handler operations	1.1 Access, interpret and apply telescopic materials handler documentation 1.2 Obtain, interpret, clarify and confirm work requirements 1.3 Identify hazards and environmental issues, assess the risks and implement control measures in line with workplace policies 1.4 Select and wear personal protective equipment required for work

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	activities 1.5 Identify, obtain and apply signage requirements in line with workplace procedures 1.6 Select required telescopic materials handler equipment or attachments and confirm the suitability of the work activities 1.7 Coordinate and communicate planned activities with other at the site prior to commencement of work activity
2. Operate telescopic materials handler in line with established requirements	2.1 Perform pre-start and start-up check in line with workplace procedures 2.2 Check telescopic materials handler controls, brakes, attachments and other implements for manoeuverability and serviceability and ensure faults are rectified or reported within scope of own responsibility and according to workplace procedures 2.3 Assess site and operating hazards and apply safe operating techniques 2.4 Operate telescopic materials handler using techniques suited to equipment capabilities, site and work conditions, and according to workplace procedures
3. Attach, secure, lift, carry and place materials to complete work activity	3.1 Use load handling communication methods as per standard operating procedures with all parties 3.2 Communicate with dogman to establish the weight of the load 3.3 Communicate with dogman to ensure safe working load requirements have been assessed and appropriate slings and lifting gear has been selected, attached and secured in line with workplace procedures 3.4 Locate machinery to ensure stable and effective shift of materials according to work requirements 3.5 Shift the load safely and effectively, using hand, audible and communication signals, in line with workplace procedures 3.6 Park up, shut down, secure and carry out post operational inspection of equipment in line with workplace procedures
4. Select, remove, fit and use attachments for a telescopic materials handler	4.1 Select attachment for the task and move and fit attachment in line with workplace procedures 4.2 Test and confirm correct fitting and operation 4.3 Use attachment within design limits and in accordance with

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	workplace procedures 4.4 Remove, clean and store attachment in line with workplace procedures
5. Relocate the telescopic materials handler	5.1 Prepare machine and equipment for relocation in line with safe work practices 5.2 Transport machine and equipment safely between worksites, observing relevant site codes and traffic management requirements
6. Conduct housekeeping activities	6.1 Clean-up work area and dispose or recycle materials according to workplace procedures. 6.2 Manage and/or report hazards to maintain a safe working environment 6.3 Complete and file or distribute documentation in a manner that complies with workplace practices

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Skill	Description
Reading	• Identifies and interprets information from workplace procedures, documentation, legislation and regulations
Numeracy	• Uses equipment operating capacity schedule to confirm safe weight load limits

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
RIIHAN309F Conduct telescopic materials handler operations (Release	RIIHAN309E Conduct telescopic materials handler operations (Release 1)	Minor updates to reflect changes to operator maintenance and relocation	Equivalent

1)		activities, and assessment conditions for attachments.	

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

Assessment Requirements for RIIHAN309F Conduct telescopic materials handler operations

Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 3.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements and performance criteria of this unit.

The candidate must demonstrate completion of telescope materials handler operations that safely, effectively and efficiently follow workplace procedures to carry out work activity on at least two occasions, and include:

- performing pre-start, start-up and shutdown procedures
- checking controls, brakes and attachments for manoeuverability and serviceability and rectifying or reporting faults
- operating the telescopic materials handler
- attaching and securing appropriate lifting gear
- shifting the load
- selecting, fitting, testing, using and removing attachments, which must be certified and approved in line with workplace procedures
- transporting the machine and equipment between work sites
- parking and securing equipment

In the course of the above the candidate must also:

- locate and apply required documentation, policies and procedures
- select and wear personal protective equipment required for work activities
- apply safe work practices, identifying and reporting potential hazards and environmental issues, and assess risks
- access, interpret and apply technical information
- apply fault finding techniques
- monitor and manage equipment performance using indicators and alarms
- identify common equipment faults
- use a range of communication techniques and equipment essential to the safe completion of work activity, including hand, audible and other signals
- meet written and verbal reporting requirements and procedures associated with telescopic materials handler operations

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

Key policies and procedures, legislation and established requirements for telescopic materials handler operations, including those relating to:

- isolation and traffic control responsibilities and authorities
- safety data sheet and hazardous materials handling methods
- development and compliance with job safety analyses and safe work method statement
- maintenance and basic diagnostic
- recyclable materials
- housekeeping activities
- environmental management plan

Key factors affecting work activities described in performance evidence above, including:

- telescopic materials handler types, characteristics, technical capabilities and limitations
- calculating safe working loads
- methods of changing machine attachments
- safe operating techniques in varying terrain
- telescopic materials handler and attachment operating techniques

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
  - telescopic materials handler
  - attachments
  - personal protective equipment
- be conducted in a safe environment and,
- be assessed in context of this sector's work environment and,
- be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed and
- confirm consistent performance can be applied in a range of relevant workplace circumstances

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing a high level of RII training product knowledge
- having an understanding and knowledge of legislations and regulations relevant to the industry and to employment and workplaces
- demonstrating the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must hold the relevant vocational competencies and have current industry skills directly relevant to the training and assessment being provided, and must work alongside a trainer and/or assessor to conduct the assessment. This means the industry subject matter expert should hold the unit being assessed (or an equivalent unit), and must also demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	**AQF indicator level*** **	**Required assessor or industry subject matter expert experience**
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 Year
	2	2 Years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 Years
Other sectors	Where this unit is being assessed outside of the Resources and Infrastructure Sectors, assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and, where no industry standard is specified, should comply with any relevant	

	regulation.

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a Unit of Competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272

TLIF0021 Administer the implementation of fatigue management strategies

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to administer the implementation of fatigue management strategies.

It includes monitoring the implementation of fatigue management strategies; recognising breaches of fatigue management policies, procedures and regulations; and developing and assessing staff competence in fatigue management. It also includes providing feedback to staff on deficiencies in their fatigue management skills and knowledge and reporting to management on the implementation of fatigue management policy.

Work is performed under limited supervision generally as a team leader or supervisor.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

F – Safety Management.

Unit Sector

Not applicable.

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Monitor the implementation of fatigue	**1.1** Work activities of workers and suppliers in organisation's products and services supply chain are monitored in accordance with organisation's fatigue risk management

	management strategies	implementation plan
		1.2 Reviews are undertaken of scheduled versus actual hours of work and, where a compliance breach is identified, corrective action is taken to analyse the reasons concerned and to rectify the situation
2	**Recognise breaches of fatigue management policies, procedures and regulations**	**2.1** Signs and symptoms of fatigue in workers are identified in accordance with workplace procedures
		2.2 Breaches of fatigue management policies, procedures and regulations in the work activities of workers and suppliers are recognised and reported in accordance with workplace procedures
		2.3 Errors and incidents relating to non-compliance with fatigue management procedures and regulations are investigated and reported in accordance with workplace procedures
		2.4 Corrective action is taken in conjunction with workers or suppliers concerned to ensure ongoing and future compliance with fatigue management policies and procedures
3	**Develop and assess staff competence in fatigue management**	**3.1** Appropriate training programs and learning resources are developed and provided to ensure workers understand the organisation's fatigue management policies and procedures, and the risks, causes and consequences of fatigue
		3.2 Workers are assessed to confirm they are competent in understanding the organisation's fatigue management strategies and can apply them to their day-to-day work activities and responsibilities
		3.3 Deficiencies in worker competence to apply organisation's fatigue management strategies to their work activities are identified and appropriate learning opportunities are provided to enable workers to achieve required competence
4	**Provide feedback to staff on deficiencies in fatigue management skills and knowledge**	**4.1** Evidence of worker deficiencies in implementing fatigue management strategies is obtained and interpreted from observation of signs and symptoms of fatigue in work activities, periodic evaluations of work performance and assessments of competence carried out as part of training and learning activities
		4.2 Workers are provided with feedback on identified deficiencies in their implementation of fatigue management strategies and appropriate support and counselling is provided on how they might address these deficiencies

	4.3 Further learning opportunities and information are provided to assist workers to implement organisation's fatigue management strategies in their area of work activity, as required
5 Report on the implementation of fatigue management policy	**5.1** Periodic audits of the implementation of fatigue management strategies in the work area/s of responsibility are carried out in accordance with workplace procedures
	5.2 Accidents, safety incidents and near misses are investigated and analysed to identify the extent to which fatigue might have been a contributing factor
	5.3 Reports on implementation of organisation's fatigue risk management system are prepared and submitted to designated personnel in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the TLI Transport and Logistics Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLIF3063 Administer the implementation of fatigue management strategies.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

Assessment Requirements for TLIF0021 Administer the implementation of fatigue management strategies

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- adapting to changes in relevant regulations, policies and procedures
- applying relevant legislation and workplace procedures
- assisting workers to identify their own learning needs on matters related to fatigue management
- communicating effectively with others regarding risk-based fatigue management
- modifying activities and taking appropriate initiatives to administer the implementation of organisation's fatigue risk management system depending on contexts, risk situations and environments
- planning and carrying out audits and reviews of organisation's fatigue risk management system
- planning and organising training and learning opportunities for workers on fatigue management and implementing organisation's fatigue risk management system
- interpreting documentation on organisation's fatigue risk management system and related policy, instructions, procedures and regulations and applying this information to supervisory activities
- recognising breaches of fatigue management strategies and regulations and taking appropriate actions in accordance with organisation's fatigue risk management system
- working collaboratively with workers and management staff to implement organisation's fatigue risk management system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- chain of responsibility obligations as they apply to fatigue risk management in relation to heavy vehicle transport activities
- factors that increase fatigue-related incidents
- hazards and risks created by fatigue in the workplace
- how fatigue affects workplace performance
- how fatigue contributes to workplace incidents

- lifestyles that promote the effective long-term management of fatigue
- options and resources for providing training and learning opportunities for workers on fatigue management and the implementation of organisation's fatigue risk management system, including:
  - fatigue management refresher training
  - in-depth training on fatigue and fatigue management techniques
  - initial induction training
  - remedial training where existing competence is assessed as being insufficient
- organisation's fatigue risk management system, including:
  - control of factors that can contribute to fatigue and fatigue-related incidents
  - corrective actions
  - the operational area/s being administered
  - workplace policies and procedures
- procedures for auditing and reviewing organisation's fatigue risk management system, and related policies and procedures for reporting audit outcomes
- processes and resources for assessing worker fatigue risk management competence
- relevant codes, regulations, permit and licence requirements
- relevant work health and safety (WHS)/occupational health and safety (OHS) regulations
- signs, symptoms, causes and consequences of fatigue in relation to workers and organisation
- strategies and ways of managing the risk of fatigue
- ways of assisting individuals to assess their own sleep patterns and to evaluate their own fitness for work such as providing information on how to identify sleep disorders and how to obtain appropriate treatment
- ways of providing feedback to workers on identified deficiencies in their competence to implement fatigue risk management strategies
- ways of recognising fatigue
- workers and organisation responsibilities for implementing fatigue management regulations and policies, including suppliers and sub-contractors in organisation's services and products supply chain.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

TLIF2010 Apply fatigue management strategies

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package.

- Minor changes to unit Application
- Minor changes to Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to apply fatigue management strategies within the transport and logistics industry.

It includes identifying and acting on signs of fatigue and implementing appropriate strategies to minimise fatigue during work activities, in particular when operating equipment, trains, vehicles, load shifting equipment, marine vessels and aircraft.

Work is undertaken in compliance with relevant legislation, regulations, codes and guidelines.

Work is performed under some supervision generally within a team environment.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

F – Safety Management.

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the	Performance criteria describe the performance needed to demonstrate

essential outcomes.	achievement of the element.
1 Identify and act on signs of fatigue	**1.1** Potential causes of fatigue are identified and actions taken to minimise their effects in accordance with workplace procedures
	1.2 Personal warning signs of fatigue are recognised, and necessary steps are taken in accordance with workplace procedures, to ensure that effective work capability and alertness are maintained
2 Implement strategies to minimise fatigue	**2.1** Workplace procedures are assessed to minimise fatigue
	2.2 Factors that increase the risk of fatigue-related accidents and incidents are minimised
	2.3 Fatigue management strategies are implemented in accordance with workplace policy and procedures
	2.4 Lifestyle choices are made that promote the effective long-term management of fatigue
	2.5 Effective practices in combating fatigue are adopted and applied
	2.6 Personal fatigue management strategies are communicated to relevant people
	2.7 Appropriate counter measures are planned to combat fatigue

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the TLI Transport and Logistics Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLIF2010A Apply fatigue management strategies.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

Assessment Requirements for TLIF2010 Apply fatigue management strategies

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package.

- Minor changes to unit Application
- Minor changes to Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- adapting to changes in rosters and standard operating procedures (SOPs) as they relate to fatigue management
- adjusting lifestyle patterns to ensure effective fatigue management during work activities
- applying precautions and required actions to minimise and control the effects of fatigue when carrying out own work functions
- applying relevant legislation and workplace procedures
- communicating effectively with others when applying fatigue management strategies
- identifying and meeting own learning needs about fatigue management related matters
- modifying activities and taking appropriate initiatives to manage fatigue in the workplace depending on work contexts, risk situations and environments
- reading and interpreting instructions, procedures, regulations and signs related to fatigue management and applying them to work activities
- recognising symptoms of fatigue and taking appropriate actions in accordance with fatigue management regulations and workplace procedures
- working collaboratively with others to manage and minimise the effects of fatigue during work activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- causes and effects of fatigue on workers
- factors that increase fatigue-related accidents
- how fatigue affects workplace performance

- how fatigue contributes to workplace accidents
- lifestyles that promote effective long-term fatigue management
- relevant fatigue management codes, regulations, permit and licence requirements
- relevant work health and safety (WHS)/occupational health and safety (OHS) regulations as they relate to fatigue
- risks and hazards created by workplace fatigue
- sources of information on fatigue
- strategies and ways of managing fatigue
- ways of recognising fatigue
- workplace policies and procedures related to fatigue management and the control of factors that can contribute to fatigue and fatigue-related accidents.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and personal protective (PPE) equipment currently used in industry
- applicable documentation, including legislation, regulations, codes of practice, workplace procedures and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

TLILIC0003 Licence to operate a forklift truck

Modification History

Release 1. This is a release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to operate a forklift truck safely in accordance with all relevant legislative requirements. Competence in this unit, does not in itself result in a HRWL licence to operate this plant.

Forklift truck means a powered industrial truck equipped with lifting media made up of a mast and an elevating load carriage to which is attached a pair of fork arms or other attachments that can be raised 900 mm or more above the ground, but does not include a pedestrian-operated truck or a pallet truck.

A person performing this work is required to hold a forklift truck High Risk Work Licence (HRWL).

This unit requires a person operating a forklift truck to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, State and Territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

Pre-requisite Unit

Not applicable

Competency Field

LIC - Licencing Units

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan work/task	**1.1** Task requirements are identified from work orders or equivalent and confirmed with relevant people and site inspection is conducted in accordance with workplace procedures
	1.2 Work area operating surface is assessed to determine suitability for operational use of forklift truck in accordance with workplace procedures
	1.3 Suitability of forklift truck and attachment working load limit (WLL) is determined for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
	1.4 Working area is inspected and appropriate paths for operating the forklift truck and moving and placing load/s in work area are assessed and managed in accordance with workplace procedures
	1.5 Hazard and risk control measures are identified and reported to relevant person/s in accordance with workplace procedures
	1.6 Traffic management plan implementation is confirmed in accordance with workplace procedures
	1.7 Appropriate communication procedures are identified with relevant people in accordance with workplace procedures
	1.8 All work is confirmed to ensure coverage of work/task requirements for the relevant work area is in accordance with workplace procedures

2 Prepare for work/task	**2.1**	Consultation with workplace person/s is maintained to ensure workplan is clear and consistent with site requirements in accordance with safe work procedures
	2.2	Weather and work environmental conditions are assessed to determine any impact on forklift truck operations in accordance with manufacturer requirements and safe work procedures
	2.3	Risk control measures for hazards identified are checked for implementation in accordance with safe work procedures
	2.4	Forklift truck is accessed in a safe manner in accordance with manufacturer requirements and workplace procedures
	2.5	Forklift truck logbook is checked in accordance with manufacturer, regulatory requirements and safe work procedures
	2.6	Pre-start checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with safe work procedures and manufacturer requirements
	2.7	Forklift truck is set up correctly with any relevant attachments as per work plan in accordance with relevant manufacturer requirements including data plate and safe work procedures
	2.8	Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
	2.9	Hazard and risk control measures are checked for implementation and communicated to people in the work area in accordance with safe work procedures
3 Perform work/task	**3.1**	Weight and positioning of load is assessed to ensure compliance with forklift truck data plate requirements and in accordance with safe work procedures

	3.2	Forklift truck is operated safely in accordance with manufacturer requirements and safe work procedures
	3.3	Loads are monitored constantly when lifting, moving, lowering and placing to ensure stability of load and avoidance of hazards in accordance with safe work procedures
	3.4	Unplanned and unsafe situations are responded to in accordance with safe work procedures
	3.5	Loads are picked up, transported and placed using all forklift truck movements in accordance with safe work procedures
	3.6	Forklift truck is parked, switched off and isolated appropriately in accordance with manufacturer requirements and safe work procedures
4 Pack Up	**4.1**	Forklift truck shutdown procedures are carried out in accordance with manufacturer requirements and safe work procedures
	4.2	Forklift truck is secured to prevent unauthorised access/use in accordance with safe work procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC2001 Licence to operate a forklift truck

Links

Companion Volume Implementation Guide - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

Assessment Requirements for TLILIC0003 Licence to operate a forklift truck

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying safe operating procedures for a forklift truck including:
  - maintaining safe operating speed
  - travelling with load lowered to an appropriate height for the terrain, operating surface and visibility in relation to direction of travel
- applying relevant forklift truck manufacturer requirements and data plate information and approved modifications to attachments fitted are in accordance with manufacturer requirements
- carrying out pre-start checks, including visual inspection which must include:
  - battery charge as required by manufacturer requirements
  - checking and interpreting data plate/s are relevant to the attachment and the forklift truck
  - checking for signs of paint separation and stressed welds indicating potential structural weakness
  - document evidence of damage
  - engine / mechanical fluid level checks including fuel as required by manufacturer requirements
  - ensuring availability of correct forklift truck logbook and updating records as required
  - ensuring forklift truck tynes or other attachment/s are securely fitted
  - ensuring seat and mirrors are adjusted appropriately and seat belt is functional
  - fluid leaks
  - lights are working effectively
  - safety equipment checks
  - signage and labels to ensure they are visible and legible
  - wheels and tyres for damage/correct inflation if applicable
- conducting and applying risk and hazard assessment strategies including:
  - insufficient lighting
  - other specific hazards including dangerous goods
  - overhead hazards and fixed structures, roof beams and doorways
  - restricted and poorly ventilated areas

  - surface suitability based on forklift truck and task requirements
  - the risk of collision with people, moving plant and fixed structures
  - weather conditions
- complying with Commonwealth, State and Territory Work Health and Safety (WHS)/Occupational Health and Safety (OHS)/Occupational Safety and Health (OSH) legislation, regulations safe work and workplace procedures
- conducting operational checks, which must ensure:
  - all controls are located, identified and tested for functionality
  - all hydraulic functions operated to maximum extension and ensuring attachment (if fitted) movements and control functions are smooth and comply with operating requirements
  - hazard warning systems (e.g. reversing beepers, lights and horns) are functional
  - recording and maintaining accurate information relating to forklift truck operations
  - safety devices as fitted
  - start-up is in accordance with manufacturer requirements
  - steering, transmission and brake functions comply with operating requirements
  - there are no unusual noises
- confirming and following traffic management plan procedures relevant to their role in the work area
- conducting relevant procedures for refuelling and isolating fuel/power source as per manufacturer requirements using appropriate PPE
- determining relevant lifting attachment to perform work/task
- determining lift requirements including:
  - positioning of unusually balanced/shaped loads
  - centre of gravity
  - dynamic nature of load
  - tyne/attachment positioning
  - weight
- ensuring risk control measures within the work area are effective as per workplace procedures
- identifying, isolating and tagging out defective equipment and reporting to authorised person/s
- interpreting and confirming relevant documentation, workplace instructions, safety information, emergency procedures for the work task and relevant area
- interpreting workplace procedures in relation to various environmental conditions
- maintaining communication with other workplace personnel through using worksite procedures including:
  - audible and visual warning devices
  - signage
  - two-way radio
  - verbal instructions
  - written instructions
- maintaining three points of contact whilst accessing and egressing forklift truck and ensuring

rungs / steps are free of hazards

- operating and monitoring safe forklift truck operations using minimum 250kg dynamic and non-dynamic loads that include:
  - aligning tynes/attachment to load
  - carrying out a lift to 75% of the maximum height
  - conducting trial lift to ensure forklift truck and load are stable, and load is safe to move
  - correctly using horns and mirrors in workplace
  - correctly positioning and using an observer to assist when operating with a load that may restrict vision or be placed out of vision of the operator
  - driving applicable to conditions and moving loads safely
  - driving a forklift truck safely with load in forward and reverse, while maintaining visibility through an obstacle course including:
    - an 'S' bend with a minimum 90 degrees left and right turn
    - ensuring load/s remains stable through pick up, transport and placement
    - forklift truck speed is appropriate to load and surroundings
    - lowering dynamic and non-dynamic loads to appropriate height for travel in forward and reverse
  - picking up, driving, manoeuvring and placing dynamic and non-dynamic loads safely at various heights within a compliant racking system
  - picking up, driving, manoeuvring and placing dynamic and non-dynamic loads safely into/onto an elevated, flat, stable area
  - tilting mast (or forks if applicable) to ensure balance of load
  - using gluts/dunnage appropriately and lowering load safely
  - using tilt and side shift (where fitted) safely to manoeuvre dynamic and non-dynamic loads into allocated space
- reporting to relevant person/s on site risk control measures that are not in place or are deficient
- setting up an exclusion zone
- securely parking forklift truck and isolating in appropriate position including:
  - minimising possible access by unauthorised person/s
  - tynes/attachment lowered to required position in accordance with manufacturer requirements
  - park brake applied
  - switching off, isolating fuel/power source and removing key according to workplace procedures
- shutting down a forklift truck in accordance with manufacturer requirements and workplace procedures

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- Australian and industry standards, codes of practice and guidelines to safely operate a forklift truck
- communication procedures including:
  - audible and visual warning devices
  - hand signals
  - questioning techniques
  - signage
  - traffic warning systems
  - two-way radio
  - written instructions
- forklift truck characteristics and capabilities, manufacturer requirements and instructions for any attachments
- impact of the following on the operation of the forklift truck including:
  - failure/loss of control including brakes and steering
  - failure of equipment during forklift truck operations
  - forklift truck instability causes including:
    - deterioration of ground condition
    - overloading
    - pick up and placement of load
    - irregular loads
  - operating on ramps and uneven surfaces and in restricted spaces
  - use of forklift truck data plate and attachment data plate and appropriate methodology to determine weight of a load is appropriate for forklift truck and any attachment if fitted including the estimation or determination from:
    - labels on the actual load
    - markings on the actual load
    - paperwork such as consignment notes, running sheets and weighbridge dockets
    - weighing a carton and calculating load
- manufacturer requirements, instructions and operator's manual
- problems, and appropriate response procedures to unplanned and/or unsafe environmental conditions including:
  - wind
  - lightning
  - water/ice impacted surface/ground
  - rain
  - extreme heat
  - Ultra violet (UV) exposure
- problems and equipment faults, and implementing appropriate response procedures to unplanned and/or unsafe situations including:
  - lock out and tag out procedures
- relevant procedures for refuelling and recharging forklift truck using appropriate PPE

including:

- gas bottle
- connecting battery to charger and disconnecting battery from charger and reconnecting to forklift truck
- refuelling

- procedures for recording, reporting and maintaining workplace records and information
- risk assessment process including hierarchy of control:
  - elimination
  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - personal protective equipment (PPE)
- safe use and compliance of different types of attachments including:
  - bale clamps
  - carpet spike for carpet rolls
  - drum carrier
  - jib attachment
  - paper roll clamps
  - personnel work platforms
  - rotators
  - slippers/fork extensions on tynes
- suitability and lifting capability of the attachment to be used
- shut down procedures for a forklift truck in accordance with manufacturer requirements
- traffic management plan procedures and requirements
- typical routine problems encountered operating a forklift truck and associated equipment, and adjustments required for correction
- workplace procedures including work plan which may be verbal, documented/written, or electronically generated
- work area operating surface suitability including issues with:
  - backfilled ground
  - bitumen (damaged, cracked)
  - concrete (damaged, cracked)
  - hard compacted soil
  - potholes
  - railway tracks
  - rough uneven or difficult terrain including sloping surfaces, uneven surfaces, steel decks and grates
  - soft soils
  - trench covers
- Work Health and Safety (WHS)/Occupational Health and Safety (OHS)/Occupational Safety

and Health (OSH) requirements, safe work and workplace procedures

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

- Simulators must not be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- a suitable forklift truck that complies with AS 2359 Powered industrial trucks and is in a safe/serviceable condition in accordance with manufacturer requirements
- associated equipment for forklift truck operations
- suitable dynamic and non-dynamic loads
- suitable compliant racking system
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including:
  - approved codes of practice and relevant guidance material
  - relevant Australian technical standards
  - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable)

Links

Companion Volume Implementation Guide - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in unit Application
- Minor changes and re-ordering of Performance Evidence
- Minor re-ordering of Knowledge Evidence
- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to safely operate a boom-type Elevating Work Platform (EWP) where the length of the boom is 11 metres or more in accordance with all relevant legislative requirements. Competence in this unit, does not in itself result in a Risk Work Licence (HRWL) to operate this plant.

Boom-type elevating work platform means a telescoping device, hinged device, or articulated device, or any combination of these, used to support a platform on which personnel, equipment and materials may be elevated.

A person performing this work is required to hold a boom-type elevating work platform HRWL.

This unit requires a person operating an EWP to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) Regulations and meets Commonwealth, State and Territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

Pre-requisite Unit

Not applicable

Competency Field

LIC - Licencing Units

Unit Sector

Not applicable

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan work/task	**1.1** Task requirements are identified from work orders or equivalent and confirmed with relevant people and a site inspection is completed in accordance with workplace procedures
	1.2 Work area ground/operating surface is assessed to determine suitability for operational use of EWP in accordance with manufacturer requirements and workplace procedures
	1.3 EWP capabilities are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
	1.4 Appropriate paths for operating the EWP and moving in work area are assessed and determined in accordance with workplace procedures
	1.5 Relevant hazard and risk control measures are applied and advised to relevant person/s in accordance with workplace procedures

	1.6	Traffic management plan implementation is confirmed in accordance with workplace procedures
	1.7	Appropriate communication procedures are identified, with relevant people in accordance with workplace procedures
	1.8	All work is confirmed to ensure coverage of work/task requirements for the relevant work area in accordance with workplace procedures
2 Prepare for work/task	**2.1**	Consultation with workplace person/s is maintained to ensure workplan is clear and consistent with site requirements in accordance with workplace procedures
	2.2	Risk control measures for hazards identified are checked for implementation in accordance with workplace procedures
	2.3	Safety equipment including Personal Protective Equipment (PPE) are inspected, fitted correctly and used in accordance with manufacturer requirements and safe work procedures
	2.4	EWP is accessed in a safe manner in accordance with manufacturer requirements and safe work procedures
	2.5	Pre-start EWP checks are carried out in accordance with manufacturers requirements and safe work procedures
	2.6	EWP is started and is checked for any abnormal noises in accordance safe work procedures
	2.7	EWP is positioned correctly as per work plan in work area in accordance with relevant manufacturer requirements and safe work procedures
	2.8	EWP is stabilised appropriately in accordance with the workplan, relevant manufacturer requirements and safe work procedures

	2.9	Operational checks from base controls are carried out in accordance with relevant manufacturer requirements and safe work procedures
	2.10	All platform controls are located, identified and tested in accordance with manufacturer requirements and safe work procedures
	2.11	All damage and defects are reported and appropriate action is taken to rectify in accordance with manufacturer requirements and safe work procedures
	2.12	EWP logbook is inspected and is correct for the EWP, is completed and signed in accordance with manufacturer requirements and safe work procedures
	2.13	Weather and work environmental conditions are assessed to determine any impact on EWP operation and positioning as per workplan in accordance with manufacturer requirements and safe work procedures
3 Perform work/task	**3.1**	Relevant hazard prevention/control measures identified are checked for implementation in accordance with safe work procedures
	3.2	EWP is safely located at point of work in work area in accordance with safe work procedures
	3.3	EWP platform is positioned for work tasks and stability and all operations are monitored constantly in accordance with safe work procedures
	3.4	Work gear and tools are stowed and secured in accordance with safe work procedures
	3.5	EWP is operated using all movements in accordance with safe work procedures and manufacturer requirements
	3.6	Unplanned and unsafe situations are responded to in accordance with safe work procedures

	3.7	All communication signals are correctly interpreted and followed whilst EWP is operated in accordance with safe work procedures
	3.8	EWP platform is accessed and egressed in accordance with safe work procedures and manufacturer requirements
	3.9	EWP is parked, switched off and isolated appropriately in accordance with manufacturer requirements and safe work procedures
4 Pack up	**4.1**	Post-operational EWP checks are carried out in accordance with manufacturer requirements and safe work procedures
	4.2	EWP boom is retracted, lowered, stowed and secured in accordance with manufacturer requirements and safe work procedures
	4.3	Safety equipment and PPE is disconnected from platform in accordance with safe work procedures
	4.4	Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe work procedures
	4.5	Outriggers and/or stabilisers, plates or packing if fitted are stowed and secured in accordance and with manufacturer requirements and safe work procedures
	4.6	EWP is shut down in accordance with manufacturer requirements and safe work procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC2005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Links

Companion Volume Implementation Guide - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

Assessment Requirements for TLILIC0005 Licence to operate a boom-type elevating work platform (boom length 11 metres or more)

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in unit Application
- Minor changes and re-ordering of Performance Evidence
- Minor re-ordering of Knowledge Evidence
- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- advising relevant person/s on site in relation to any hazards and risk elimination/control strategies
- applying safe operating procedures for an Elevating Work Platform (EWP) including all functions within the safe working rated capacity including:
  - boom/s as low as possible and fully retracted whilst travelling (self propelled EWP only)
  - boom/s in line with EWP where practical whilst travelling (self propelled EWP only)
  - EWP stability
  - gently accelerating and braking to minimise boom/s swing (self propelled EWP only)
  - maintaining safe operating speed in relation to the work condition
  - travelling with work platform raised to an appropriate height for the terrain and visibility in relation to direction of travel (self propelled EWP only and in accordance with manufacturers specifications)
- applying emergency procedures
- applying traffic management plan procedures relevant to their role in the work area
- carrying out operational checks on EWP including:
  - testing of all EWP safety devices
  - all controls are located, identified and tested for functionality from the base controls and platform controls
  - hazard warning systems including travel beepers and lights are functional
  - start-up is in accordance with manufacturer requirements
  - steering, transmission and brake functions comply with operating requirements (self

propelled EWP only)
    - there are no unusual noises
- carrying out pre-start checks, including visual inspection which must include:
    - battery fluid level as required by manufacturer requirements
    - checking compliance plate is relevant to the load/s being used on the EWP
    - engine / mechanical fluid level checks as required by manufacturer requirements
    - ensuring availability of correct logbook and updating records as required
    - ensuring EWP platform and attachment/s fitted in platform are secured
    - evidence of damage
    - fluid leaks
    - lights are working effectively (where fitted)
    - safety equipment checks
    - signage and labels to ensure they are visible and legible
    - structural weaknesses including paint separation or stressed welds
    - wheels and tyres for damage/correct inflation if applicable
- checking compliance plate and load chart for reach requirements and load suitability
- clarifying workplan and checking understanding
- complying with Commonwealth, State and/or Territory work health and safety (WHS)/occupational health and safety (OHS)/occupational safety and health (OSH) legislation and regulations
- controlling and operating a boom type elevating work platform ensuring movements and control functions are safe, smooth and comply with operating requirements including:
    - any combination of the movement of the extending boom used to support a platform on which personnel, equipment and materials are elevated to perform the work task/s
    - avoidance of ground depressions
    - correctly using observer guidance of work platform, main chassis and extending boom
    - demonstrating the safe operation of an EWP in forward and reverse, while maintaining visibility (where applicable)
    - driving (where applicable) applicable to conditions and moving platform and load/s safely
    - ensuring warning devices are functioning correctly
    - interpreting directional arrows correctly on platform controls during forward, reverse, left and right
    - lowering boom to its resting position
    - monitoring platform, main chassis and extending boom movement constantly ensuring safe work procedures are followed
    - raising platform and slewing within manufacturer requirements
    - raising platform to its full extent or 75% of the maximum height capacity (whichever is greater)
    - stability of the EWP and the work platform
    - manoeuvring and positioning the platform to perform work task/s safely whilst at its full extent or a minimum height of 75% of the maximum capacity (whichever is greater)

- conducting and applying hazard identification and risk elimination or minimisation strategies including:
    - barricades and controls to prevent the risk of collision with people, moving vehicles and fixed structures
    - environmental conditions including:
        - wind
        - lightning
        - water impacted ground
        - rain
        - extreme heat
        - Ultra Violet (UV) exposure
    - ground conditions (surface and slopes) and assessing work area operating surface suitability based on machine and task requirements
    - overhead hazards including electric lines and service pipes
    - personal protective equipment (PPE)
    - restricted areas and crush points from work platform and external surroundings
    - safety related tags on electrical switches/isolators that have an impact on point of work of EWP operator
    - sufficient lighting
    - suitable area for set-up, positioning and safely operating EWP
    - suitable firm and stable operating surface
    - use of safety observer
- entering work platform correctly including:
    - lowering platform safely and stably to appropriate height to access safely
    - clipping on of fall restraint/arrest device
    - accessing platform safely
- exiting work platform correctly including:
    - lowering platform safely and stably to appropriate height to egress safely
    - unclipping of fall restraint/arrest device
    - exiting platform safely
- identifying, isolating and tagging out defective equipment and reporting to authorised person/s
- inspecting and using relevant safety equipment, including:
    - anchor point/s
    - emergency retrieval system from base controls and platform controls where fitted
    - energy absorber/s
    - lanyard/s
    - safety harness/es
- interpreting and confirming relevant documentation, workplace instructions, safety information and emergency procedures for the work task and relevant area
- interpreting workplace procedures in relation to various work environmental conditions

- maintaining communication with other workplace personnel using appropriate workplace procedures including procedures to ensure all movements are conveyed clearly and succinctly including:
  - 2-way radio
  - audible and visual warning devices
  - making and interpreting hand signals
  - questioning to confirm understanding
  - signage
  - written instructions
- recording and maintaining accurate information relating to EWP operations
- reporting to relevant person/s on site risk control measures that are not in place or deficient
- stabilising procedures for an EWP including:
  - checking levels
  - removing obstacles and obstructions
  - deploying and retracting outriggers (if fitted)
  - establishing correct size plates for packing (if required)
- shutting down a boom type EWP in accordance with manufacturer requirements and workplace procedures
- using and interpreting EWP manufacturer requirements and data, including compliance plate and load chart, to enable correct EWP selection for task including:
  - boom
  - platform
  - weight including outrigger load or wheel load.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- Australian and industry standards, codes of practice and guidelines to safely operate an EWP (boom length 11 metres or more) including:
  - nominal reach, measured horizontally from centre point of rotation to outer edge of platform in its most extended position
  - vertical distance from floor of platform to surface supporting elevating work platform with platform at its maximum height
- appropriate mathematical calculations to estimate loads ensuring EWP is not overloaded
- appropriate workplace communication procedures including:
  - 2-way radio
  - audible and visual warning devices
  - questioning techniques
  - signage
  - hand signals

    - traffic warning systems
    - written instructions
- compliance with permit condition requirements including:
    - from electrical supply authority
    - if operating on roads or footpaths
- EWP characteristics and capabilities, manufacturer requirements and instructions
- hazards including:
    - all ground and /or operating surface hazards
    - traffic including pedestrians, vehicles, other mobile plant and building structures
    - overhead hazards including electric lines, service pipes, doorways, roof beams, and lights
    - obstacles or obstructions
    - insufficient lighting
    - other relevant hazards
- identification and avoidance of person/s potential crush or entrapment points
- identification and avoidance of potential contact with overhead electrical conductor's
- identification and avoidance of potential contact with structures near work platform/boom or chassis
- impact of the following on the operation of the EWP including:
    - failure/loss of control including brakes and steering
    - failure of equipment including hydraulic system
    - EWP and platform instability due to:
        - deterioration of ground/operating surface condition
        - gradient of operating surface
        - overloading
        - poor load placement
        - irregular loads
    - emergency procedures and safety equipment, including the use of:
        - safety harness/es
        - energy absorbers
        - lanyard/s
        - anchor point/s
        - emergency retrieval systems
- lock out and tag out procedures
- problems, and appropriate response procedures to unplanned and/or unsafe environmental conditions
- procedures for recording, reporting and maintaining workplace records and information
- relevant manufacturer requirements and instructions
- relevant procedures for refuelling/recharging EWP using appropriate PPE
- risk assessment process including hierarchy of control:
    - elimination

  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - personal protective equipment (PPE)
- problems and equipment faults, and implementing appropriate response procedures to unplanned and/or unsafe situations
- procedures for shutting down a boom type EWP in accordance with manufacturer requirements
- relevant documentation requirements
- suitability and lifting capability of the EWP to be used
- traffic management plan procedures and requirements
- typical routine problems encountered operating a EWP and adjustments required for correction
- wind speed factors that affect stability of EWP as per manufacturer requirements
- work area operating surface suitability including issues with:
  - backfilled ground
  - bitumen (damaged, cracked)
  - concrete (damaged, cracked)
  - hard compacted soil
  - potholes
  - railway tracks
  - rough uneven or difficult terrain including sloping surfaces, uneven surfaces, steel decks and grates
  - soft soils
  - trench covers
- work health and safety (WHS)/occupational health and safety (OHS)/occupational safety and health (OSH) and codes of practice requirements for boom type elevating work platforms
- work plan which may be verbal, documented/written, or electronically generated

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace

conditions.

- Simulators must not be used in the assessment of this unit of competency

Resources for assessment must include access to:

- appropriate boom-type elevating work platform (boom length 11 metres or more) in a safe/serviceable condition in accordance with manufacturer requirements
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including:
  - approved codes of practice and relevant guidance material
  - relevant Australian technical standards
  - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

Companion Volume Implementation Guide - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

TLILIC0022 Licence to operate a slewing mobile crane (up to 20 tonnes)

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to safely operate a slewing mobile crane with a Maximum Rated Capacity (MRC) up to 20 tonnes in accordance with all relevant legislative responsibilities. Competence in this unit, does not in itself result in a High-Risk Work Licence (HRWL) to operate this plant.

Slewing mobile crane means a mobile crane incorporating a boom or jib that can be slewed, but does not include:

- a front-end loader, or
- a backhoe, or
- an excavator, or
- other earth moving equipment, when configured for crane operation.

A person performing this work is required to hold a slewing mobile crane with a MRC up to 20 tonnes HRWL.

This unit requires a person operating a slewing mobile crane with an MRC up to 20 tonnes to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) regulations and meets Commonwealth, state and territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licensing class as detailed in this unit.

Pre-requisite Unit

Not applicable.

Competency Field

LIC - Licencing Units.

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan work/task	**1.1** Task requirements are identified from work orders or equivalent, a lift plan is confirmed with associated personnel and a site inspection is conducted in accordance with workplace procedures
	1.2 Work area operating surface is confirmed to determine ground suitability for operational use of mobile crane in accordance with workplace procedures
	1.3 Mobile crane Rated Capacity (RC) and the lifting gear Working Load Limit (WLL) are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
	1.4 Appropriate paths for operating the mobile crane and moving and placing load/s in work area are assessed and determined in accordance with workplace procedures
	1.5 Relevant hazard identification and risk elimination/control measures are applied and advised to associated personnel in accordance with workplace procedures
	1.6 Traffic management plan implementation is confirmed in accordance with workplace procedures
	1.7 Appropriate communication procedures are identified with associated personnel in accordance with workplace procedures
	1.8 All crane and lifting operations are confirmed to ensure relevant work area requirements are correct in

		accordance with a lift plan and workplace procedures
	1.9	Information required to ensure that lifting equipment and gear inspection, use, maintenance and storage complies with manufacturer requirements is obtained and interpreted
2 Prepare for work/task	**2.1**	Consultation with workplace personnel is established and maintained to ensure lift plan is clear and consistent with site requirements in accordance with a lift plan and workplace procedures
	2.2	Risk control measures for hazards identified are checked for implementation in accordance with the lift plan and safe work procedures
	2.3	Mobile crane is accessed safely in accordance with manufacturer requirements and safe work procedures
	2.4	Pre-start mobile crane checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
	2.5	Mobile crane is set up correctly with any lifting gear and stabilised as per the lift plan in accordance with relevant manufacturer requirements, including load chart/s and safe work procedures
	2.6	Fly jib is set up as required in accordance with specific manufacturer requirements and safe work procedures
	2.7	Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
	2.8	Crane logbook is checked to confirm current compliance, is correct for the crane type, is completed and signed and required rectifications have been signed off in accordance with manufacturer requirements and safe work procedures
	2.9	Weather and work environment conditions are assessed to determine any impact on mobile crane operations in accordance with manufacturer requirements and safe work procedures

	2.10	Weight of the load is confirmed
	2.11	Derated WLL of lifting equipment resulting from selected slinging techniques is calculated and confirmed as suitable to meet the requirements of the lift plan
	2.12	Suitable lifting points and slinging techniques are identified
	2.13	Lifting equipment and gear are confirmed as ready for safe use
	2.14	Load destination stability is confirmed ensuring it is able to bear the load and is prepared for safe access and landing
3 Perform work/task	**3.1**	Lifts are determined within the RC of the mobile crane in accordance with the load chart/s and lift plan
	3.2	Boom/jib and hook block are safely positioned over the load following directions from associated personnel in accordance with the lift plan and safe work procedures
	3.3	Main hook, including any lifting gear where required, are connected to the load and used safely in accordance with the lift plan, safe work procedures and manufacturer requirements
	3.4	Test lift is carried out in accordance with dogging and safe work procedures
	3.5	Loads are transferred using relevant crane movements and tag lines, as required, in accordance with lift plan and safe work procedures
	3.6	Load and crane movement is monitored constantly and crane is operated safely in accordance with lift plan and safe work procedures
	3.7	All required communication signals are correctly interpreted and followed whilst crane is operated in accordance with the lift plan and safe work procedures
	3.8	Load is lowered and landed safely in accordance with lift plan and safe work procedures

	3.9	Lifting gear is positioned for safe disconnection from the load and crane is positioned for next task in accordance with lift plan and safe work procedures
	3.10	Lifting equipment and gear are inspected for defects, and defective items are isolated, tagged and reported
4 Pack up	**4.1**	Crane boom/jib, lifting gear and associated equipment are stowed and secured as required in accordance with manufacturer requirements and safe work procedures
	4.2	Crane fly jib is removed to storage position and secured as required in accordance with manufacturer requirements and safe work procedures
	4.3	Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe work procedures
	4.4	Outriggers, plates and/or packing are stowed and secured in accordance with manufacturer requirements and safe work procedures
	4.5	Crane is shut down and secured to prevent unauthorised access/use in accordance with safe work procedures
	4.6	Shutdown crane checks are carried out in accordance with safe work procedures and manufacturer requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the TLI Transport and Logistics Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC0010 Licence to operate a slewing mobile crane

(up to 20 tonnes).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

Assessment Requirements for TLILIC0022 Licence to operate a slewing mobile crane (up to 20 tonnes)

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant mathematical calculations in conjunction with lift plan and load chart to determine radius requirements and relevant lifting gear to perform work/task to enable crane to be configured for load, including:
  - boom
  - counterweight/s
  - fly-jib
  - line pull
  - outrigger positioning
  - type of hook
- applying relevant crane movements, including:
  - boom/jib up and down (luffing)
  - catching load swing appropriately
  - positioning and using main and auxiliary hook and lifting gear to connect to load safely
  - raising and lowering hoist
  - slew boom/jib
  - telescope in and out (where manufacturer requirements allow)
  - travel
- carrying out operational checks ensuring:
  - all controls are located, identified and tested for functionality
  - all hydraulic functions are operational
  - lifting gear movements and control functions are smooth and comply with lift plan
  - hazard warning systems, safety, audible and visual warning devices are checked for to ensure they are functional, including:
    - reversing beepers
    - lights
    - horns
    - crane computer alarm (where fitted)

    - anti-two block alarms (where fitted)
  - start-up is in accordance with manufacturer requirements and safe work procedures
  - there are no unusual noises
  - steering, transmission and brake functions comply with operating requirements
- conducting and applying risk and hazard assessment strategies, including:
  - confirming work area operating surface suitability based on crane and task requirements
  - dynamic loads
  - load swing
  - overloading
  - pick and placement of load
  - tyre pressures or track condition
  - asymmetric loads
  - overhead hazards
  - restricted and poorly ventilated areas
  - risk of collision with people, moving plant and fixed structures
  - adequate lighting
  - weather conditions
- complying with Commonwealth, state and territory work health and safety (WHS)/occupational health and safety (OHS) legislation and safe work procedures
- communicating with other associated personnel through using appropriate workplace procedures, including:
  - two-way radio
  - active listening
  - demonstrating and interpreting hand signals
  - questioning to confirm understanding
  - signage/visual aids
  - whistles
  - written instructions
- completing pre-start checks, including:
  - boom wiring harness connection
  - engine/mechanical fluid level checks as required by manufacturer requirements
  - ensure rungs/steps are free of hazards
  - fire extinguisher
  - fluid leaks
  - lights work effectively
  - locating, identifying and confirming all controls
  - mirrors and seat are adjusted appropriately for the operator
  - presence of correct logbook
  - safety equipment checks
  - signage and labels to ensure they are visible and legible

  - checking for signs of paint separation and stressed welds indicating potential structural weakness
  - tyres and wheels for damage/wear and correct inflation
  - updating records as required
  - visual damage or equipment faults
- confirming and following traffic management plan procedures relevant to their role in the work area
- determining any defects or faults with operation of crane, recording in relevant documentation and reporting to relevant person/s
- ensuring risk control measures within the work area are effective in accordance with safe work procedures
- following directions of dogger or rigger
- inputting crane configuration into crane computer (where fitted) and checking operation to accurately reflect crane configuration
- interpreting and acting on communications signals, including:
  - hoist down - hand and whistle and two-way radio
  - hoist up - hand and whistle and two-way radio
  - luff boom down - hand and whistle and two-way radio
  - luff boom up - hand and whistle and two-way radio
  - slew left - hand and whistle and two-way radio
  - slew right - hand and whistle and two-way radio
  - stop - hand and whistle and two-way radio
  - telescope in - hand and whistle and two-way radio (where manufacturer requirements allow)
  - telescope out - hand and whistle and two-way radio (where manufacturer requirements allow)
- interpreting and confirming relevant documentation for the work task and relevant area
- maintaining three points of contact whilst accessing crane
- monitoring load disconnection from hook is safe and ensuring no movement of crane operational controls
- operating a slewing mobile crane configured to a Rated Capacity (RC) of between 7 tonnes and up to 20 tonnes to lift and move four different loads using the main hook through an obstacle course, including a 180-degree minimum slew using all crane operational controls while the load is in full view of the crane operator. Loads must consist of:
  - a load of >50% of the RC of the crane with a boom length of >75%, and
  - stillage containing at least ten scaffolding standards or containing a load of steel pipes of equivalent weight that requires a dogger to sling, and
  - an asymmetric load that requires a dogger to sling, and
  - a round load with a minimum diameter of 300 mm and minimum length of three m that requires a dogger to sling
- positioning the mobile crane for safe operation for:
  - application of the task/s

  - manoeuvring in the workplace
  - the stability of the mobile crane and the load
- recording and maintaining accurate information relating to crane operations
- reporting to relevant person/s on workplace control measures that are not in place or deficient
- setting up and validating an exclusion zone in accordance with the lift plan
- shutting down a slewing mobile crane in accordance with manufacturer requirements and safe work procedures
- stabilising a slewing mobile crane for operation by:
  - correctly positioning plates or packing
  - deploying outriggers
  - establishing correct size plates or packing in accordance with the lift plan
  - checking levels
- planning for and managing load stability, including:
  - confirming and inspecting appropriate lifting gear and applying slinging techniques appropriate to the type of load, its mass and centre of gravity
  - confirming the Working Load Limit (WLL) tags of the lifting equipment and gear and calculating the deration of the WLL resulting from the slinging techniques applied
- test-lifting load just clear of lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure:
  - slinging is correct
  - all crane equipment is functioning properly
  - load centre of gravity is correct
  - loads of unusual shape or weight distribution are correctly slung
- test-lifting load just clear of lifting plane to allow for checks of crane computer (where fitted) to ensure:
  - load measuring equipment can be used to verify calculated weight of load
  - near capacity loads do not overload crane.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- appropriate workplace communication procedures, including:
  - listening
  - hand signals
  - questioning techniques
  - signage
  - two-way radios
  - written instructions
  - whistles
- crane configuration mathematical calculations to:

  - estimate loads
  - establish radius requirements
- relevant lifting gear to perform work/task
- characteristics and impact of factors affecting non-slewing articulated mobile crane stability whilst mobiling loads compared to slewing crane, including:
  - articulation of crane
  - correct tyre pressure (inflation/condition)
  - driving safely on public and private roadways
  - unique handling characteristics of a mobile articulated crane and the emergency procedures in the event of loss of control as per manufacturer recommendations
  - pick up and carry the load
  - side slope derations
- characteristics and impact of factors affecting vehicle loading crane stability whilst mobiling loads compared to slewing crane, including:
  - correct tyre pressure (inflation/condition)
  - emergency procedures in the event of incident
  - position of operator
  - use of stabilizers
- characteristics and impact of factors affecting reach stacker stability whilst mobiling loads compared to slewing crane, including:
  - correct tyre pressure (inflation/condition)
  - driving safely on roadways
  - emergency procedures in the event of an incident
  - impact of boom height and steering on stability
  - use of stabilisers
- crane, lifting gear load chart/s and manufacturer requirements
- lift impacting factors, including:
  - centre of gravity
  - dynamic nature of load
  - flex/deflexion of boom
  - length of load
  - radius of boom during lift
  - weight
- set-up of:
  - jib
  - fly jib
- hazards, including:
  - erection and pack-up
  - crane stability
  - ground stability and condition including recently filled trenches and slopes

    - insufficient lighting
    - obstacles or obstruction
    - other specific hazards and dangerous materials
    - overhead hazards, including:
        - electric lines
        - service pipes
        - structures
        - vegetation (trees)
    - traffic, including pedestrians, vehicles and other plant
    - operations on unusual, uneven or difficult terrains
- manufacturer requirements on outrigger procedures
- manufacturer requirements and instructions on shutting down and packing up crane
- mobile slewing crane characteristics and capabilities to allow crane configuration to suit a range of loads
- relevant workplace instructions, safety information and emergency procedures
- relevant documentation requirements and procedures for recording, reporting and maintaining workplace records and information
- risk assessment management and mitigation strategies, including hierarchy of control:
    - elimination
    - substitution
    - isolation
    - engineering controls
    - administrative controls
    - personal protective equipment (PPE)
- roles and responsibilities of duty holders in accordance with legislative obligations of WHS/OHS requirements, safe work and workplace procedures
- pre-start and operational checks required for a slewing mobile crane
- weather bureau forecasts and environmental conditions that could impact operation, including:
    - lightning
    - wind
    - water impacted ground
    - ultraviolet (UV) exposure
- problems and appropriate response procedures to unplanned and/or unsafe situations and environmental conditions
- hazards commonly encountered while preparing load:
    - instability of landing surfaces
    - overhead and underground hazards
    - insufficient lighting
    - traffic
    - weather

  - pedestrian traffic
  - work at heights
- selection, inspection, care, handling, application, limitations and storage of lifting equipment and gear:
  - flexible steel wire rope (FSWR) sling
  - synthetic sling
  - chain sling (including shortener)
  - spreader bar or lifting beam
  - tag line
  - shackles
  - eyebolts
  - plate clamps
- methods of making temporary connections to loads using fibre and synthetic ropes:
  - single sheet bend
  - clove hitch
  - rolling hitch
  - bowline
- stability of load and avoidance of hazards, including:
  - allowing for boom deflection
  - boom/jib as low as possible
  - carrying load near to ground surface
  - crane stability
  - gently accelerating and braking on slew/boom to minimise load swing
  - lowering load safely onto appropriate dunnage taking into consideration swing and restrictions of area
  - minimum boom/jib length
  - minimum speed
  - using handheld tag lines as required
  - identification of incorrect sling of load
- starting procedure of crane in accordance with manufacturer requirements
- workplace standards, requirements, policies and procedures for conducting safe work operations for the mobile slewing crane
- work area suitability based on relevant ground reports, including:
  - backfilled ground
  - bitumen
  - concrete
  - hard compacted soil
  - pre-contaminated soils
  - rock
  - rough, uneven ground

- soft soils.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

- Simulators must not be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- slewing mobile crane with a Maximum Rated Capacity (MRC) of between 7 tonnes to 20 tonnes in safe/serviceable working order in accordance with manufacturer specifications
- appropriate loads as outlined in the performance evidence requirements
- appropriate personnel to sling and direct loads including:
  - licenced dogger or rigger
- communications equipment including:
  - two-way radios
  - whistles
- relevant personal protective equipment (PPE)
- relevant documentation for operating a slewing mobile crane with an MRC up to 20 tonnes, including:
  - approved codes of practice and relevant guidance material
  - relevant Australian technical standards
  - manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

TLILIC0024 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit specifies the skills and knowledge required to safely operate a vehicle loading crane with a Maximum Rated Capacity (MRC) of 10 metre tonnes or more. Competence in this unit, does not in itself result in a High-Risk Work Licence (HRWL) to operate this plant.

Vehicle loading crane means a crane mounted on a vehicle for loading and unloading the vehicle.

A person performing this work is required to hold a vehicle loading crane HRWL.

This unit requires a person operating a slewing vehicle loading crane with a MRC of 10 metre tonnes or more to:

- plan for the work/task
- prepare for the work/task
- perform work/task
- pack up.

Licensing/Regulatory Information

Legislative and regulatory requirements are applicable to this unit of competency.

This unit is based on the licensing requirements of Part 4.5 of the Model Work Health and Safety (WHS) regulations and meets Commonwealth, state and territory HRWL requirements.

The National Assessment Instrument (NAI) is the mandated assessment for the HRWL to operate the relevant licencing class as detailed in this unit.

Pre-requisite Unit

Not applicable.

Competency Field

LIC - Licencing Units.

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan work/task	**1.1** Task requirements are identified from work orders or equivalent, a lift plan is confirmed with associated personnel and a site inspection is conducted in accordance with workplace procedures
	1.2 Work area operating surface is confirmed to determine the quality of ground suitability for operational use of vehicle loading crane in accordance with workplace procedures
	1.3 Vehicle loading crane Rated Capacity (RC) and the lifting gear Working Load Limit (WLL) are established for the load/s and work/task requirements in accordance with manufacturer requirements and workplace procedures
	1.4 Appropriate paths for operating the vehicle loading crane and moving and placing load/s in work area are assessed and determined in accordance with workplace procedures
	1.5 Relevant hazard identification and risk elimination/control measures are applied and advised to relevant personnel in accordance with workplace procedures
	1.6 Traffic management plan implementation is confirmed and followed in accordance with workplace procedures
	1.7 Appropriate communication procedures are identified and tested with associated personnel in accordance with workplace procedures
	1.8 All tasks are confirmed to ensure requirements for the relevant work area in accordance with workplace procedures

	1.9	Information required to ensure that lifting equipment and gear inspection, use, maintenance and storage complies with manufacturer requirements is obtained and interpreted
Prepare for work/task **2**	**2.1**	Consultation with workplace personnel is established and maintained to ensure all crane and lifting operations are clear and consistent with site requirements in accordance with a lift plan and workplace procedures
	2.2	Risk control measures for hazards identified are checked for implementation in accordance with the lift plan and safe work procedures
	2.3	Vehicle loading crane controls are accessed safely in accordance with manufacturer requirements and safe work procedures
	2.4	Pre-start vehicle loading crane checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with safe work procedures and manufacturer requirements
	2.5	Vehicle loading crane is set up correctly with any lifting gear as per the lift plan and in accordance with relevant manufacturer requirements, including load chart/s and safe work procedures
	2.6	Boom/jib and lifting gear are set up, as required, in accordance with specific manufacturer requirements and safe work procedures
	2.7	Vehicle loading crane is stabilised appropriately in accordance with the lift plan, relevant manufacturer requirements and safe work procedures
	2.8	Operational checks are carried out and any damage and defects are reported, recorded and appropriate action is taken in accordance with manufacturer requirements and safe work procedures
	2.9	Vehicle loading crane logbook is inspected and is correct for the crane type, is completed and signed, and required rectifications have been signed off in accordance with manufacturer requirements and safe work procedures
	2.10	Weather and work environment conditions are assessed to determine any impact on vehicle loading crane operations in accordance with manufacturer requirements and safe work procedures

	2.11	Weight of load is identified, calculated or estimated
	2.12	Derated WLL of lifting equipment resulting from selected slinging techniques is calculated
	2.13	Suitable lifting points and slinging techniques are identified
	2.14	Lifting equipment and gear is prepared for safe use
	2.15	Load destination is confirmed for stability ensuring it is able to bear the load and is prepared for safe access and landing
Perform work/task 3	**3.1**	Lifts are determined within the RC of the vehicle loading crane in accordance with the load chart/s and lift plan
	3.2	Boom/jib and hook block are safely positioned over the load following directions from associated personnel where applicable and in accordance with the lift plan and safe work procedures
	3.3	Lifting equipment and gear are connected to the load and used safely in accordance with the lift plan, safe work procedures and manufacturer requirements
	3.4	Test lift is carried out in accordance with safe work procedures
	3.5	Loads are transferred using relevant crane movements and tag lines, as required, in accordance with lift plan and safe work procedures
	3.6	Load and crane movement is monitored constantly and crane is operated safely in accordance with lift plan and safe work procedures
	3.7	All required communication signals are correctly interpreted and followed whilst crane is operated in accordance with the lift plan and safe work procedures

	3.8	Load is lowered and landed safely in accordance with lift plan and safe work procedures
	3.9	Lifting gear is disconnected from load and crane is positioned safely and efficiently for next task in accordance with lift plan and safe work procedures
	3.10	Lifting equipment and gear are inspected for defects, and defective items are isolated, tagged and reported
4 Pack up	**4.1**	Crane boom/jib, lifting gear and associated equipment are stowed and secured as required in accordance with manufacturer requirements and safe work procedures
	4.2	Relevant motion locks and brakes are applied as required in accordance with manufacturer requirements and safe work procedures
	4.3	Stabilisers are stowed and secured in accordance with manufacturer requirements and safe work procedures
	4.4	Crane is shut down and secured to prevent unauthorised access/use in accordance with safe work procedures
	4.5	Plates or packing are stowed and secured in accordance with safe work procedures
	4.6	Shutdown crane checks are carried out in accordance with safe work procedures and manufacturer requirements

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the TLI Transport and Logistics Training Package

Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC0002 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

Assessment Requirements for TLILIC0024 Licence to operate a vehicle loading crane (capacity 10 metre tonnes and above)

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least one occasion and include:

- applying relevant communication signals from associated personnel
- applying relevant crane movements, including:
  - boom/jib up and down (luffing)
  - catching load swing appropriately
  - positioning and using main hook and lifting gear to connect to load safely
  - raise and lower hoist
  - slew boom/jib
  - telescope in and out
- applying relevant mathematical calculations in conjunction with lift plan and load chart to determine radius requirements and relevant lifting gear to perform work/task to enable crane to be configured for load, including:
  - boom
  - stabiliser positioning
  - type of hook
- carrying out operational checks ensuring:
  - all controls are located, identified and tested for functionality
  - all hydraulic functions are operational
  - lifting gear movements and control functions are smooth and comply with lift plan
  - hazard warning systems, safety, audible and visual warning devices are checked to ensure they are functional, including:
    - reversing beepers
    - lights
    - horns
  - start-up is in accordance with manufacturer requirements and safe work procedures
  - there are no unusual noises
  - crane control functions comply with operating requirements
- communicating with other associated personnel through using appropriate worksite procedures, including:

  - two-way radio
  - active listening
  - demonstrating and interpreting hand signals
  - questioning to confirm understanding
  - signage
  - whistles
  - written instructions
- completing pre-start checks, including:
  - engine/mechanical fluid level checks as required by manufacturer requirements
  - presence of correct logbook
  - evidence of damage
  - fluid leaks
  - lights work effectively
  - locating, identifying and confirming all controls
  - fire extinguisher
  - safety equipment checks
  - signage and labels to ensure they are visible and legible
  - checking for signs of paint separation and stressed welds indicating potential structural weakness
  - tyres and wheels for damage/wear and correct inflation
  - updating records as required
  - visual damage or equipment faults
- complying with Commonwealth, state and territory work health and safety (WHS)/occupational health and safety (OHS) legislation
- conducting and applying risk and hazard assessment strategies, including:
  - confirming work area operating surface suitability based on crane and task requirements
  - dynamic loads
  - ground conditions, including condition of surface and slopes
  - load swing
  - overloading
  - lifting and placing load
  - tyre pressures and tyre condition
  - asymmetric loads
  - overhead hazards, including electric lines and service pipes
  - restricted and poorly ventilated areas
  - risk of collision with people, moving plant and fixed structures
  - adequate lighting
  - traffic, including pedestrians, vehicles and other plant
  - weather conditions
- confirming and following traffic management plan procedure relevant to their role in the

work area

- identifying hazards and using appropriate risk controls and safety measures and equipment relevant to slinging loads
- selecting and inspecting appropriate lifting gear and applying slinging techniques appropriate to the type of load, its mass and centre of gravity
- identifying the Working Load Limit (WLL) tags of the lifting equipment and gear and calculating the deration of the WLL resulting from the slinging techniques applied
- using lifting gear, including flexible steel wire rope (FSWR) sling, synthetic sling, chain sling (including shortener), spreader bar or lifting beam, tag line, shackles and eyebolts, and using bends and hitches when slinging, including:
  - single sheet bend
  - clove hitch
  - bowline
- determining any defects or faults with operation of crane and reporting to relevant person/s
- ensuring risk control measures within the work area are effective in accordance with workplace procedures
- identifying, isolating and tagging out defective lifting equipment, and reporting to authorised person/s
- interpreting and confirming relevant documentation for the work task and relevant area
- maintaining three points of contact whilst accessing load surface area of vehicle loading crane and ensure rungs/steps are free of hazards
- monitoring load disconnection from hook is safe and ensuring no movement of controls or the load
- operating a vehicle loading crane configured to its Rated Capacity (RC) of 10 metre tonnes or more to lift and move four different loads using the main hook through an obstacle course using all crane operational controls while the load is in full view of the crane operator. Loads must consist of:
  - a load of >50% of the RC of the crane with a boom length of >75%, and
  - a round load with a minimum length of 3 metres and minimum weight of at least 200 kg, and
  - an asymmetrical load, and
  - stillage or cage containing loose items with a minimum weight of at least 200 kg
- positioning the vehicle loading crane for safe operation for:
  - application of the task
  - manoeuvring in the workplace
  - stability of the vehicle loading crane and the load
- positioning vehicle loading crane in relevant area for next task
- recording and maintaining accurate information relating to crane operations
- reporting to relevant person/s on site risk control measures that are not in place or deficient
- setting up and validating an exclusion zone
- shutting down a vehicle loading crane in accordance with manufacturer requirements and safe work procedures
- stabilising a vehicle loading crane for operation by:

  - correctly positioning plates or packing
  - deploying stabilisers
  - establishing correct size plates or packing in accordance with lift plan
  - levels are checked
- test-lifting load just clear of lifting plane to allow for checks to be safely made to ensure:
  - slinging is correct
  - all crane equipment is functioning properly
  - load centre of gravity is correct
  - loads of unusual shape or weight distribution are correctly slung
- using communications signals, including:
  - hoist down - hand and whistle and radio
  - hoist up - hand and whistle and radio
  - luff boom down - hand and whistle and radio
  - luff boom up - hand and whistle and radio
  - slew left - hand and whistle and radio
  - slew right - hand and whistle and radio
  - stop - hand and whistle and radio
  - telescope in - hand and whistle and two-way radio (where manufacturer requirements allow)
  - telescope out - hand and whistle and two-way radio (where manufacturer requirements allow).

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- appropriate worksite communication procedures, including:
  - listening
  - hand signals
  - questioning techniques
  - signage
  - two-way radios
  - written instructions
  - whistles
- characteristics and impact of factors affecting vehicle loading crane stability whilst moving loads, including:
  - overloading
  - poor load placement
  - asymmetric loads
  - tyre deflation/condition

- crane, lifting gear load chart/s and manufacturer requirements
- hazards, including:
  - pack up and crane stability, crane tipping and demolition sites
  - ground stability, including ground condition, recently filled trenches and slopes
  - insufficient lighting
  - obstacles or obstruction
  - other specific hazards and dangerous materials
  - overhead hazards, including:
    - electric lines
    - service pipes
    - fixed structures
    - vegetation (trees)
  - traffic, including pedestrians, vehicles and other plant
  - operations on unusual, uneven or difficult terrains
- lift impacting factors, including:
  - centre of gravity
  - dynamic nature of load
  - flex/deflexion of load
  - length
  - radius of lift
  - weight
- manufacturer requirements on stabiliser procedures
- manufacturer requirements and instructions on shutting down and packing up crane
- mathematical calculations to:
  - estimate loads
  - establish radius requirements
  - determine relevant lifting gear to perform work/task
- pre-start and operational checks required for a vehicle loading crane
- problems and appropriate response procedures to unplanned and/or unsafe situations and environmental conditions
- relevant documentation requirements and procedures for recording, reporting and maintaining workplace records and information
- relevant workplace instructions, safety information and emergency procedures
- risk assessment management and mitigation strategies, including hierarchy of control:
  - elimination
  - substitution
  - isolation
  - engineering controls
  - administrative controls
  - personal protective equipment (PPE)

- roles and responsibilities of duty holders in accordance with legislative obligations of WHS/OHS requirements and safe work/workplace procedures
- hazards commonly encountered while slinging:
  - instability of landing surfaces
  - overhead and underground hazards
  - insufficient lighting
  - traffic
  - weather
  - pedestrian traffic
  - work at heights
- selection, inspection, care, handling, application, limitations and storage of lifting equipment and gear:
  - Flexible Steel Wire Rope (FSWR) sling
  - synthetic sling
  - chain sling (including shortener)
  - spreader bar or lifting beam
  - tag line
  - shackles
  - eyebolts
- methods of making temporary connections to loads using fibre and/or synthetic ropes:
  - single sheet bend
  - clove hitch
  - bowline
- stability of load and avoidance of hazards, including:
  - allowing for boom deflection
  - boom/jib as low as possible
  - crane stability
  - gently accelerating and braking on slew/boom to minimise load swing
  - lowering load safely onto appropriate dunnage taking into consideration swing and restrictions of area
  - minimum boom/jib length
  - minimum speed
  - using handheld tag lines as required
  - identification of incorrect sling of load
- starting procedure of crane in accordance with manufacturer requirements
- set-up of:
  - jib
  - fly jib (where fitted)
- vehicle loading crane characteristics and capabilities to allow crane configuration to suit a range of loads
- weather bureau forecasts and environmental conditions that could impact operation,

including:

- lightning
- wind
- water impacted ground
- ultraviolet (UV) exposure

- work area suitability based on relevant ground reports, including:
  - backfilled ground
  - bitumen
  - concrete
  - hard compacted soil
  - pre-contaminated soils
  - rock
  - rough, uneven ground
  - soft soils
- workplace standards, requirements, policies and procedures for conducting operations for the vehicle loading crane.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

- Simulators must not be used in the assessment of this unit of competency.

Resources for assessment must include access to:

- vehicle loading crane with a RC of 10 metre tonnes or more in safe/serviceable working order in accordance with manufacturer specifications
- appropriate loads as outlined in the Performance Evidence requirements
- communication equipment, including:
  - two-way radios
  - whistles
- relevant personal protective equipment (PPE)
- relevant documentation for operating a vehicle loading crane with an RC of 10 metre tonnes or more, including:

- approved codes of practice and relevant guidance material
- relevant Australian technical standards
- manufacturer guidelines (instructions, requirements or checklists), relevant industry standards and operating procedures (where applicable).

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

TLILIC2015 Licence to drive a medium rigid vehicle

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package.

Modification of assessment conditions to remove an implementation barrier.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to obtain a licence to drive a medium rigid vehicle. It includes systematically and efficiently controlling all vehicle functions, monitoring traffic and road conditions, managing vehicle condition and performance, and effectively managing hazardous situations.

Types of medium rigid vehicles include:

- two axle rigid trucks, not being a prime mover, above 8 tonnes GVM or
- a two axle bus above 8 tonnes GVM.

Assessment of this unit will be undertaken within a licensing examination conducted by, or under the authority of, the relevant state/territory driver licensing authority.

This unit applies to driving that is carried out in accordance with relevant state/territory driver licensing authority licence requirements and regulations for medium rigid vehicles.

Driving is performed with limited or minimum supervision, and with limited accountability and responsibility for self and others in achieving the prescribed outcomes.

Driving involves the application of routine vehicle driving principles and procedures to maintain safety and to operate a medium rigid vehicle across a variety of driving contexts.

The primary legislative requirements applicable to this unit of competency are state/territory legislation in relation to road use and driver licensing.

This unit addresses the knowledge and skills necessary for the granting of a Medium Rigid Driver Licence.

Being awarded this unit of competency is a necessary requirement to obtain a Medium Rigid Driver Licence but is only one of several criteria. Prospective licence applicants should check with the state/territory driver licensing authority for other criteria (such as licence tenure and medical fitness) to confirm other eligibility requirements before undertaking training and/or assessment.

Pre-requisite Unit

Not applicable.

Competency Field

LIC – Licensing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Drive a medium rigid vehicle	1.1 Medium rigid vehicle is started, steered, manoeuvred, positioned and stopped in accordance with traffic regulations, manufacturer instructions and relevant vehicle handling procedures
	1.2 Engine power is managed to ensure efficiency and performance, and to minimise engine and transmission damage
	1.3 Braking system of medium rigid vehicle is managed and operated efficiently to ensure effective control of vehicle under all conditions
	1.4 Driving hazards are identified and/or anticipated and avoided or controlled through defensive driving
	1.5 Medium rigid vehicle is driven in reverse, maintaining visibility and achieving accurate positioning
	1.6 Medium rigid vehicle is parked, shutdown and safely secured according to traffic regulations
	1.7 Load is safely and effectively restrained
2 Monitor traffic and road conditions	2.1 Traffic and road conditions are constantly monitored and acted on to enable safe operation and to ensure no injury to people or damage to property, equipment, loads and facilities
	2.2 Interaction with other road users is conducted courteously in accordance with road rules to ensure safe and efficient traffic flow
3 Monitor and	3.1 Vehicle performance is maintained through pre-operational

maintain vehicle performance		inspections and vehicle checks
	3.2	Appropriate signage, lights and equipment are checked for operational effectiveness and for conformity to prescribed traffic regulations

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit is equivalent to TLILIC2015B Licence to drive a medium rigid vehicle.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

Assessment Requirements for TLILIC2015 Licence to drive a medium rigid vehicle

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package.

Modification of assessment conditions to remove an implementation barrier.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- anticipating and monitoring traffic hazards and taking appropriate action
- applying precautions and required action to eliminate, minimise or control identified hazards
- applying relevant procedures that reflect legislative requirements
- carrying out pre-operational vehicle checks including:
  - checking and topping up fluid levels
  - checking:
    - brakes
    - operation of vehicle lights and indicators
    - tyre pressures
  - visually checking vehicle
- communicating effectively with others
- handling vehicle including:
  - accelerating and braking
  - managing engine performance
  - operating vehicle controls, instruments and indicators
  - positioning and stopping a vehicle
  - reversing a vehicle
  - starting a vehicle
  - steering and manoeuvring a vehicle
  - using defensive driving techniques
- negotiating a range of complex traffic infrastructure (such as roundabouts, traffic lights, stalemate intersections, railway level crossings)
- reading and interpreting relevant instructions, procedures, information and signs.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- driving hazards and related defensive driving techniques
- efficient driving techniques
- engine power management and safe driving strategies
- medium rigid vehicle controls, instruments and indicators, and their use
- medium rigid vehicle handling procedures
- pre-operational checks carried out on vehicle and related action
- relevant state/territory driver licensing authority road rules, regulations, permit and licence requirements.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Practical driving aspects must be assessed in a vehicle typical of the class as approved by the state/territory driver licensing authority. The use of simulators for driver testing is not permitted.

The assessor must use the mandatory assessment tool provided by the state/territory driver licensing authority to conduct the assessment for this unit, in accordance with licensing authority requirements.

The state/territory driver licensing authority may prescribe approved routes, which must be used for the final assessment.

Assessment must occur in the following traffic and road conditions:

- on open and/or private roads with moderate inclines and declines
- typical weather conditions.

and may also include traffic and road conditions at a depot, base or warehouse.

Resources for assessment include:

- a range of relevant exercises, case studies and/or simulations
- appropriate range of relevant on-road operational or workplace situations
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- relevant materials, tools, equipment and personal protective equipment currently used in industry.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

TLILIC2016 Licence to drive a heavy rigid vehicle

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package.

Modification of assessment conditions to remove an implementation barrier.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to obtain a licence to drive a heavy rigid vehicle. It includes systematically and efficiently controlling all vehicle functions, monitoring traffic and road conditions, managing vehicle condition and performance, and effectively managing hazardous situations.

Heavy rigid vehicle includes:

- a rigid vehicle, not being an unladen prime mover, with a minimum of three axles and a minimum 15 tonnes GVM or
- a modified three axle prime mover with a certified detachable tray (with capacity to carry 75% of its specified GVM) with a GVM of 15 tonnes and holds dual registration (HC & HR) or
- a three axle articulated bus or
- a three axle bus above 15 tonnes GVM.

Assessment of this unit will be undertaken within a licensing examination conducted by, or under the authority of, the relevant state/territory driver licensing authority.

This unit applies to driving that is carried out in accordance with relevant state/territory driver licensing authority licence requirements and regulations for heavy rigid vehicles.

Driving is performed with limited or minimum supervision, and with limited accountability and responsibility for self and others in achieving the prescribed outcomes.

Driving involves the application of routine vehicle driving principles and procedures to maintain safety and to operate a heavy rigid vehicle across a variety of driving contexts.

The primary legislative requirements applicable to this unit of competency are state/territory legislation in relation to road use and driver licensing.

This unit addresses the knowledge and skills necessary for the granting of a Heavy Rigid Driver Licence.

Being awarded this unit of competency is a necessary requirement to obtain a Heavy Rigid Driver Licence but is only one of several criteria. Prospective licence applicants should check with the state/territory driver licensing authority for other criteria (such as licence tenure and medical fitness) to confirm other eligibility requirements before undertaking training and/or

assessment.

Pre-requisite Unit

Not applicable.

Competency Field

LIC – Licensing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Drive a heavy rigid vehicle	1.1 Heavy rigid vehicle is started, steered, manoeuvred, positioned and stopped in accordance with traffic regulations, manufacturer instructions and relevant vehicle handling procedures
	1.2 Engine power is managed to ensure efficiency and performance, and to minimise engine and gear damage
	1.3 Braking system of heavy rigid vehicle is managed and operated efficiently to ensure effective control of vehicle under all conditions
	1.4 Driving hazards are identified and/or anticipated and avoided or controlled through defensive driving
	1.5 Heavy rigid vehicle is driven in reverse, maintaining visibility and achieving accurate positioning
	1.6 Heavy rigid vehicle is parked, shutdown and safely secured according to traffic regulations
	1.7 Load is safely and effectively restrained
2 Monitor traffic and	2.1 Traffic and road conditions are constantly monitored and acted on to enable safe operation and to ensure no injury to

	road conditions		people or damage to property, equipment, loads and facilities
		2.2	Interaction with other road users is conducted courteously in accordance with road rules to ensure safe and efficient traffic flow
3	**Monitor and maintain vehicle performance**	3.1	Vehicle performance is maintained through pre-operational inspections and vehicle checks
		3.2	Appropriate signage, lights and equipment are checked for operational effectiveness and for conformity to prescribed traffic regulations

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLILIC2016B Licence to drive a heavy rigid vehicle.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

Assessment Requirements for TLILIC2016 Licence to drive a heavy rigid vehicle

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package.

Modification of assessment conditions to remove an implementation barrier.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- anticipating and monitoring traffic hazards and taking appropriate action
- applying precautions and required action to eliminate, minimise or control identified hazards
- applying relevant procedures that reflect legislative requirements
- carrying out pre-operational vehicle checks including:
  - checking and topping up fluid levels
  - checking:
    - brakes
    - operation of vehicle lights and indicators
    - tyre pressures
  - visually checking vehicle
- communicating effectively with others
- handling vehicle including:
  - accelerating and braking
  - managing engine performance
  - operating vehicle controls, instruments and indicators
  - positioning and stopping a vehicle
  - reversing a vehicle
  - starting a vehicle
  - steering and manoeuvring a vehicle
  - using defensive driving techniques
- negotiating a range of complex traffic infrastructure (such as roundabouts, traffic lights, stalemate intersections, railway level crossings)
- reading and interpreting relevant instructions, procedures, information and signs.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- driving hazards and related defensive driving techniques
- efficient driving techniques
- engine power management and safe driving strategies
- heavy rigid vehicle controls, instruments and indicators, and their use
- heavy rigid vehicle handling procedures
- pre-operational checks carried out on vehicle and related action
- relevant state/territory driver licensing authority road rules, regulations, permit and licence requirements.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Practical driving aspects must be assessed in a vehicle typical of the class as approved by the state/territory driver licensing authority. The use of simulators for driver testing is not permitted.

The assessor must use the mandatory assessment tool provided by the state/territory driver licensing authority to conduct the assessment for this unit according to licensing authority requirements.

The state/territory driver licensing authority may prescribe approved routes, which must be used for the final assessment.

Assessment must occur in the following traffic and road conditions:

- on open and/or private roads with moderate inclines and declines
- typical weather conditions.

and may also include traffic and road conditions at a depot, base or warehouse.

Resources for assessment include:

- a range of relevant exercises, case studies and/or simulations
- appropriate range of relevant on-road operational or workplace situations
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- relevant materials, tools, equipment and personal protective equipment currently used in industry.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to apply work health and safety (WHS)/occupational health and safety (OHS) regulations and codes of practices in the electrotechnology workplace.

It includes applying safe working practices, following workplace procedures for hazard identification and risk control. It also includes electrotechnology worker responsibilities and application for health and safety, risk management and adherence to safety practices as part of electrotechnology work functions when preparing to enter a work area.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to enter an electrotechnology workplace	**1.1** Work area access permits are obtained from appropriate person/s in accordance with workplace procedures

	1.2	Relevant workplace WHS/OHS safety regulations and codes of practices are identified and followed when entering the electrotechnology work area
	1.3	Safe work methods for controlling risks are obtained, read and applied prior to undertaking work activity in accordance with WHS/OHS workplace procedures
	1.4	Preparation for electrical and non-electrical isolation is carried out to prevent creation of hazards from loss of machine/system/process control in accordance with WHS/OHS workplace procedures
	1.5	Tools, equipment and chemicals required for the electrotechnology work are checked for safety and correct functionality in accordance with workplace procedures and regulatory requirements
	1.6	Personal protective equipment (PPE) is worn appropriate to the electrotechnology work area and in accordance with workplace procedures
2 Apply safe electrotechnology working practices	**2.1**	Risk control work measures are implemented in accordance with WHS/OHS workplace procedures
	2.2	Procedures for dealing with accidents, fires and emergencies are followed in accordance with workplace procedures, scope of responsibility and capabilities
	2.3	Safe work methods are applied when working at heights including safe and effective use of safety equipment
	2.4	Safe work methods are used when undertaking lifting, lowering, pushing, pulling, carrying or otherwise moving, holding or restraining workplace tasks in accordance with relevant code of practice
	2.5	Safe work methods for removing an electric shock victim from a live electrical situation are demonstrated in accordance with workplace emergency management procedures
	2.6	Working area is kept clean, neat and tidy in accordance with workplace housekeeping procedures
3 Follow electrotechnology workplace procedures for hazard identification and	**3.1**	Hazards are identified, control measures implemented and reviewed through regular active participation in the consultation process with employer and other employees

risk control

3.2 Hazards in the work area are identified and reported to relevant person/s in accordance with workplace procedures

3.3 WHS/OHS documentation and incident records are completed in accordance with regulatory requirements and workplace procedures

3.4 Workplace instructions are followed in accordance with regulatory requirements and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) regulations, legislation, codes of practices and procedures in the workplace, including:
  - identifying typical hazards associated with work environments and assessing risk/s in an electrotechnology workplace
  - applying and reviewing risk control measures to minimise, control or eliminate identified hazards
  - reporting hazards to relevant person/s
  - applying safe working practices/methods
  - contributing to WHS/OHS consultative processes
- following relevant workplace emergency management procedures and instructions relating to WHS/OHS and emergency incidents
- selecting and using appropriate personal protective equipment (PPE)
- applying correct manual handling techniques
- confirming (safe) isolation of an electrical supply and isolation of potential electrical and non-electrical hazards has been completed by an authorised person
- demonstrating safe methods of removing an electric shock victim from a live electrical situation
- selecting an appropriate ladder for a given situation and performing a safety check before use
- completing relevant WHS/OHS documentation.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- effective verbal and written communication techniques
- electrotechnology work environment, including:
  - appropriate fire extinguisher for a given type of fire
  - commonly used workplace safety signs

  - relevant industry standard for safe workplace procedures
  - risk assessment documentation
  - typical hazards associated with a range of work environments
  - use of fire extinguishers
  - housekeeping and potential hazards in relation to improper housekeeping
  - workplace procedures used to control the risks associated with workplace hazards
- legal requirements relevant to WHS/OHS in the workplace, including:
  - appropriate personal protective equipment (PPE)
  - asbestos awareness and reporting hazardous gases, including supervisory requirements and duty of care
  - difference between hazards and risks
  - duty holder responsibilities, as specified in WHS/OHS Acts, regulations and codes of practice
  - employer and employee responsibilities, rights and obligations
  - general aims and objectives of the relevant state or territory legislation relating to WHS/OHS
  - hazards that may be present in the electrotechnology workplace, the harm they can cause and how this harm occurs
  - housekeeping and potential hazards in relation to improper housekeeping
  - major functions of safety committees and representatives
  - powers of health and safety inspectors
  - relevant WHS/OHS regulations, codes and practices
  - underlying principles of WHS
- life support - cardiopulmonary resuscitation (CPR) in the workplace, including:
  - first aid
  - responsibilities of the first aider
  - priorities of first aid management for any accident or injury
  - procedures required at an accident scene
  - legal and ethical issues, which may impact on the management of care
  - 'duty of care'
  - examination of a casualty for injuries
  - effect of cardiopulmonary arrest on the body
  - managing simulated conditions of airway obstruction, respiratory arrest and cardiopulmonary arrest
  - single and two-person CPR
  - signs and symptoms of an altered level of consciousness
  - management of simulation of a casualty with an altered level of consciousness
  - signs and symptoms of shock
  - management of simulation of a casualty in shock
- relevant safe work method statements (SWMS)/job safety analysis (JSA) or risk mitigation processes, including:

- emergency management plan
- hierarchy of WHS/OHS hazard risk control measures
- principles of risk assessment/management and required documentation

- typical hazards associated with electrotechnology work environments and their control, including:
  - asbestos, including:
    - common types of asbestos containing building materials
    - warning signs used to identify the presence of asbestos
    - effects of asbestos on the human body
    - requirements for reporting the presence of asbestos
  - silica, including:
    - types of materials that contain crystalline silica (silica dust)
    - methods of releasing silica dust
    - recommended levels of exposure to crystalline silica
    - effects of crystalline silica on the human body
  - hazardous gases
  - chemicals in the workplace, including:
    - hazardous substances and dangerous goods and their classifications
    - labelling and storage requirements for chemicals
    - purpose and interpretation of safety data sheets (SDS)/material safety data sheets (MSDS)
  - confined spaces, including:
    - control measures for working in a designated confined space
    - hazards associated with working in a confined space
    - workplace situations that could be classified as a confined space
  - physical and psychological hazards, including excessive noise, vibration, thermal stress, radiation, lasers, occupational overuse syndrome, stress, drugs and alcohol
  - safe manual handling principles, including:
    - procedures and methods for manual handling
    - situations that may cause manual handling injuries
    - types of manual handling injuries and their effect
  - working at heights, including:
    - hazards and precautions associated with working on ladders, elevated work platforms (EWP) and scaffolds
    - identification of work area as a height risk and use appropriate safety equipment to prevent a fall
  - working safely with electricity, including:
    - effects of electric shock on the human body
    - protection offered by a residual current device (RCD)
    - need for ensuring the (safe) isolation of an electrical supply

- appropriate method of removing an electric shock victim from a live electrical situation
- precautions that can minimise the chance of electric shock (earthing, extra-low voltage (ELV), fuses, circuit breakers and RCDs)
- common causes of electrical accidents.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, emergency management plan, equipment specifications, regulations, codes of practice and operation manuals
- relevant WHS/OHS legislation, regulations and codes of practice related to hazards management in the electrotechnology industry and workplace.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0010 Compile and produce an energy sector detailed report

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to compile and produce an energy sector detailed report.

It includes planning; identifying information sources; collecting, analysing and formatting information applicable to the electrotechnology industry in developing and obtaining approval for energy sector report.

This unit is typically for technicians working as part of a product/application/service research and/or design, development and implementation team. This generally involves working closely with a range of management and production/operations personnel and requires balancing the business and technical sides of the research process.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1	**Identify energy sector report requirement**	**1.1** Work health and safety (WHS)/occupational health safety (OHS) requirements and workplace procedures are identified and applied
		1.2 Report writing techniques are reviewed and adopted in accordance with workplace procedures
		1.3 Scope and parameters of energy sector report are evaluated and identified in accordance with workplace procedures
		1.4 Criteria from other related works impacting on the report development are determined from relevant sources
		1.5 Report information and sources are identified, and availability and reliability of information is assessed for relevance
2	**Develop energy sector report**	**2.1** Scenarios/requirements identified in consultation with relevant person/s and industry regulatory and job requirements are included in report
		2.2 Report is developed in collaboration with relevant person/s
		2.3 Relevant person/s is identified to assist in the compilation of the report
		2.4 Report is reviewed and adjusted to rectify anomalies
		2.5 Report is compiled in accordance with workplace policies and procedures
		2.6 Research information is analysed and compiled for the final report
3	**Obtain approval for final energy sector report**	**3.1** Report is presented, discussed and authorised by relevant person/s
		3.2 Modifications to report resulting from presentation/discussion with authorised person/s are negotiated
		3.3 Final report is presented and approval obtained from authorised person/s

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE124A Compile and produce an energy sector detailed report.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0010 Compile and produce an energy sector detailed report

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing energy sector report information
- applying relevant work health and safety (WHS)/occupational health safety (OHS) requirements
- collaborating with relevant person/s in compiling report
- compiling and producing an energy sector report, including:
  - identifying workplace policies and procedures
  - developing report brief incorporating scenarios and requirements
  - communicating with relevant person/s to determine report requirements
  - identifying scope and parameters of report
  - determining impact of related works
  - developing design brief incorporating scenarios and all requirements
- identifying source, availability and reliability of information for report
- obtaining approval for final energy sector report
- presenting and discussing report with relevant person/s, including presenting final report and reviewing and adjusting report to rectify anomalies
- successfully negotiating alterations to proposed report.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- communicating with personnel, including:
  - oral communications
  - written procedures and work instructions
- communicating with suppliers
- communicating with customers
- purpose and extent of maintaining work activities records in an enterprise, including:

- types of records for maintaining work activities in an enterprise
- methods for recording and maintaining work records
- work records required by regulation requirements
- using basic computer functions including:
  - starting up
  - selecting application
  - entering information
  - saving
  - printing
- techniques of analysis, including:
  - use of appropriate sampling techniques to collect data
  - types of data and classification
  - effective questionnaire design
  - data collection errors
  - frequency tables
  - statistical diagrams drawing and interpretation
  - the general shape of a frequency distribution
  - different types of diagrams
  - mean time between failures calculations
- summary of statistics, including:
  - measures of central tendency
  - measures of dispersion
  - a 5-point summary for a given data set, box and whisker plot distribution
  - data sets comparison using measures of centre and spread
  - the effect of outliers on measures of centre and spread
  - use computer programs or calculators to simplify calculations
- correlation and regression, including:
  - bivariate data and scatter diagrams
  - product-moment correlation coefficient calculation and interpretation
  - difference between causation and correlation
  - equations of regression lines from bivariate data with a calculator and line plotting on a scatter diagram
  - using the equation of regression to make predictions in practical situations
  - investigation of practical problems using correlation and regression
- investigation and reporting, including:
  - presentation of a well formatted report with a clearly stated aim
  - using the internet to obtain relevant data
  - description of the statistical method and design chosen to meet the aim of the investigation
  - statistical analysis and results reporting

  - evaluation and interpretation of the results of the investigation
  - discussion of the investigation with reference to real world applications
  - chronology of the investigation
- analysis techniques
- collaboration and communication techniques
- presentation and negotiation skills
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- report writing techniques.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0019 Fabricate, assemble and dismantle utilities industry components

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to fabricate, assemble and dismantle utilities industry components using fitting and metal fabrication techniques.

It includes the safe use of hand tools, fixed and portable power tools; cutting, shaping, joining and fixing; using metallic and non-metallic materials; dismantling and assembling equipment; mechanical measurement and marking out; and, reading drawings/diagrams.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for dismantling, assembling and fabrication work	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a given work area are identified and applied in accordance with workplace procedures

	1.2	WHS/OHS risk control measures and workplace procedures are followed in preparation for the work
	1.3	Work instructions and relevant workplace procedures, industry standards, codes of practice and regulations for dismantling, assembling and fabrication are identified and applied
	1.4	Scope of work to be undertaken is obtained from relevant documentation and from work supervisor
	1.5	Advice is sought from work supervisor to ensure work is coordinated effectively with other persons
	1.6	Materials required for work are identified and obtained in accordance with workplace procedures
	1.7	Tools, equipment and measuring devices needed to carry out the work are obtained and checked for correct operation and safety
2 Dismantle and assemble utilities industry apparatus	**2.1**	WHS/OHS risk control measures and workplace procedures for dismantling and assembling apparatus are followed
	2.2	Circuits/apparatus/plant are checked and isolation confirmed in accordance with WHS/OHS workplace requirements and procedures
	2.3	Relevant tools are selected and used correctly and safely in accordance with manufacturer instructions and workplace procedures
	2.4	Relevant manufacturer guides and instructions are followed when dismantling and assembling apparatus
	2.5	Apparatus components are marked or tagged correctly during dismantling to ensure correct and efficient reassembly in accordance with workplace procedures
	2.6	Dismantled components and parts are stored to protect them against loss or damage in accordance with manufacturer instructions and workplace procedures
	2.7	Apparatus is dismantled and assembled without waste of materials and energy, damage to apparatus, the surrounding environment or services
	2.8	Unplanned events are referred to supervisor for

		directions in accordance with workplace procedures
	2.9	Quality checks are carried out in accordance with workplace procedures
	2.10	Worksite is tidied, tools and equipment cleaned and securely stored in accordance with workplace procedures
	2.11	Work supervisor is notified of dismantling and assembling apparatus completion in accordance with workplace procedures
3 Fabricate utilities industry components	**3.1**	WHS/OHS risk control measures and workplace procedures for fabricating components are followed
	3.2	Circuits/apparatus/plant are checked and isolated in accordance WHS/OHS workplace requirements and procedures
	3.3	Relevant tools and equipment are selected, used correctly and safely in accordance with manufacturer instructions and workplace procedures
	3.4	Drawings, diagrams and instructions for fabrication of mechanical components are followed in accordance with workplace procedures
	3.5	Component dimensions are determined directly by measuring, or by calculation from information supplied in job drawings and instructions
	3.6	Mechanical components are fabricated by measuring, marking out, cutting, joining and fixing accurately using relevant equipment and tools, minimising waste of materials and energy and/or damage to the surrounding environment or services
	3.7	Unplanned events are referred to supervisor for directions in accordance with workplace procedures
	3.8	Quality checks are carried out in accordance with workplace procedures
	3.9	Worksite is tidied, tools and equipment cleaned and securely stored in accordance with workplace procedures
	3.10	Work supervisor is notified of fabrication completion in

accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Hand tools must include:	• drills and drilling with different types of drills used in the electrotechnology industry • tools for holding, cutting, driving, shaping, breaking and bending materials • tools for cutting metallic and non-metallic material
Relevant workplace policies and procedures must include:	• circuits/apparatus/plant isolation procedures • workplace referral and reporting procedures
Sheet metal work must include:	• application of a range of fabrication material types • use of tools for cutting, bending, folding and punching sheet metals
Tapping and threading must include:	• tools for cutting internal and external threads to materials used for electrotechnology work
Workshop planning processes and materials must include:	• metallic and non-metallic materials used in the electrotechnology industry and their application

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE102A Fabricate, assemble and dismantle utilities industry components.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0019 Fabricate, assemble and dismantle utilities industry components

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- applying sustainable energy work practices to reduce waste when marking out
- complying with relevant electrical regulations and legislations
- consulting with work supervisor
- correctly marking, tagging and storing components during dismantling
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- drawing freehand mechanical components showing all information needed for its manufacture/fabrication
- fabricating, dismantling, assembling utilities industry components, including:
  - applying safety procedures when using holding and cutting tools
  - cutting a thread on metallic components
  - demonstrating safe use of a bench drill
  - dismantling electrical, electronic, instrumentation or refrigeration/air conditioning piece of equipment using correct procedures
  - assembling electrical, electronic, instrumentation or refrigeration/air conditioning piece of equipment using correct procedures
  - drilling metallic and non-metallic components
  - fabricating components using sheet metal and fabrication tools
- following manufacturer guides and instructions
- following work instructions
- holding and cutting materials accurately
- interpreting and completing workplace documentation
- interpreting mechanical drawings/diagrams and instructions used in the electrotechnology industry
- joining components using correct method and equipment
- laying out a drawing of mechanical components using engineering drawing convention

- marking out, cut, bend, drill and join sheet metal
- measuring, calculating and marking out a project accurately in accordance with workplace procedures
- selecting and using portable power tools correctly and safely
- selecting and using relevant hand tools correctly and safely
- tapping and threading metallic and/or non-metallic components
- using vernier calipers and micrometers to measure components
- maintaining a clean worksite and equipment
- modifying metal enclosures
- demonstrating safe drilling practices
- modifying plastic enclosures
- performing quality checks
- planning for dismantling, assembling and fabrication work.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- mechanical drawing interpretation and sketching, including:
  - industry drawing standards of mechanical components
  - abbreviations and symbols used in drawing of mechanical components
  - interpretation of mechanical drawings commonly used in the electrotechnology industry (orthogonal projection, third angle - detail and assembly drawings, and pictorial views)
  - laying out a drawing of mechanical components using engineering drawing convention
  - freehand drawings of mechanical components showing all information needed for its manufacture/fabrication
- workshop planning and materials, including:
  - methods used to work safely in an industrial work environment
  - typical non-electrical hazards in the workplace
  - control measures for dealing with hazards identified
  - type of metallic and non-metallic materials used in the electrotechnology industry and application of the common materials
  - planning process
- measuring and marking out, including:
  - reasons for measuring and marking out
  - sustainable energy work practices related to reducing waste when marking out
- holding and cutting materials, including:
  - procedures for using a range of tools for cutting, shaping, and finishing metallic and non-metallic materials
  - safety procedures when using holding and cutting tools

- drills and drilling, including:
  - types of drills used in the electrotechnology industry
  - drilling metallic and non-metallic components
  - safe use of a bench drill
- tapping and threading including type and size of commonly used threads used in electrotechnology work
- general hand tools used in electrotechnology work
- joining techniques, including:
  - machine screws
  - welding, brazing or soldering techniques
- portable power tools in electrotechnology work, including:
  - applications of portable power tools
  - using portable power tools
  - fabricating components using power tools
  - requirements for testing and tagging cord connected electrical equipment
- compressed gas operated tools in electrotechnology work
- sheet metal work, including:
  - types of sheet metal materials used in the electrotechnology work
  - names and applications of the types of fabrication materials
  - techniques used in fabricating sheet metal, including cutting, bending, drilling/punching, joining and cutting mitres
  - marking out, cutting, bending, drilling and/or cutting and/or punching holes, joining and cutting mitred joints using sheet metal
  - sustainable energy work practices to reducing waste when fabricating using sheet metal
- low tolerance measurement, including:
  - tolerance
  - techniques in using vernier callipers and micrometers
- dismantling and assembly techniques, including procedures for ensuring the safe treatment of dismantled components
- relevant tools for specific tasks, including:
  - tapping and threading
  - general hand tools used in electrotechnology work
  - joining
  - portable electric power tools
  - dismantling and assembly techniques
  - measuring and marking out
  - holding and cutting metallic and non-metallic materials
  - sheet metal work

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0030 Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to prepare electrotechnology/utilities drawings using manual drafting and computer-aided design (CAD) equipment and software.

It includes preparing, planning and completing electrotechnology/utilities drawings using manual drafting and CAD equipment and software. It also includes preparation and modification of preliminary electrotechnology/utilities drawings and diagrams using manual drafting methods, techniques, procedures, devices and CAD equipment and software from specifications, layouts, sketches or verbal instructions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECS0033 Use engineering applications software on personal computers

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEECD0031 Prepare engineering drawings using manual drafting and CAD for electrotechnology applications

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan electrotechnology/utilities drawing using manual drafting and CAD equipment and software	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures are identified and applied
	1.2 Hazards are identified, risks are assessed and control measures are implemented
	1.3 Extent of work is determined from job specifications and discussions with relevant person/s
	1.4 Relevant person/s is consulted to coordinate work
	1.5 CAD software, tools and equipment required for work are obtained in accordance with workplace procedures
2 Prepare electrotechnology/utilities drawing using manual drafting and CAD equipment and software	**2.1** WHS/OHS risk control measures and procedures for carrying out work are followed
	2.2 Design, detailed drawings and layouts required are determined from job specifications
	2.3 Technical data of system components is interpreted to determine parameters included in detailed drawings
	2.4 Relevant CAD software tools are used to produce detailed drawings based on industry standard protocols
	2.5 Detailed drawings are checked for accuracy and compliance with job specifications
	2.6 Unplanned situations are responded to in accordance with workplace procedures and approval with authorised

		person/s
3 Complete electrotechnology/utilities drawing using manual drafting and CAD equipment and software	**3.1**	Completed drawings are submitted to relevant person/s and checked for accuracy and compliance with job specifications
	3.2	Modifications are followed and drawings re-submitted for final approval
	3.3	Completed drawings are filed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Preparation of electrotechnology/utilities drawings using manual drafting and CAD equipment and software must include:	• architectural and site plan drawings • auxiliary views and revolutions • civil/geographic information systems (GIS) drawing basics • electrotechnology drafting specifications, layouts, sketches or verbal instructions in conformance with Australian Standards and enterprise standards • electrotechnology drawings line work, symbols, lettering and techniques • layouts, assembly and installation drawings, and modifications (version control), and conversion between drawing types • manual drafting methods, techniques, procedures and devices • map drafting • organisational procedures for collaborating with the client, key stakeholders and other staff in the selection of the preferred option

- organisational procedures for preparation and production of drawings, drawing sets, specifications, drafting documentation and operating and maintenance instructions/manuals for products and systems
- organisational procedures for processing, filing and saving all graphics, specifications, instructions and related documentation in correct format and location in accordance with work site procedures
- pole and structure elevations
- safety precautions when working with CAD equipment
- sketching methods, techniques, procedures and devices encompassing freehand sketching
- sketching techniques
- specifications obtained from design information, customer requirements, sketches, preliminary layouts and/or field investigations
- survey base plan drawings
- technical drawing equipment, including CAD applications, peripherals and devices including CAD software for electrotechnology applications and related commands
- type, form and size of materials from information, abbreviations and symbols supplied on electrotechnology drawings, briefs and/or specifications

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE191A Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0030 Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying modifications to original drawings and resubmitting for approval
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including implementing risk control measures
- checking drawings for accuracy and compliance with job specifications
- completing electrotechnology/utilities drawings using manual drafting and computer-aided design (CAD) equipment and software
- determining job specifications from designs, drawings and layouts
- filing completed drawings
- obtaining specifications from design information, customer requirements, sketches, preliminary layouts and/or field investigations
- planning and preparing electrotechnology/utilities drawings using manual drafting and CAD equipment and software
- preparing and modifying preliminary electrotechnology/utilities drawings and diagrams using CAD equipment and software
- responding to unplanned situations
- submitting completed drawings
- using CAD equipment and related computer commands
- working with relevant person/s.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- architectural and site plan drawings for electrotechnology/utilities applications, including:
  - principles, purpose, terms and conventions usage in basic architectural drawings
  - typical scales

- base plan symbols and labels
- electrotechnology/utilities site plan symbols and labels
- signing and markings site plan symbols and labels
- architectural design and planning principles
- elevation drawings
- architectural symbols and abbreviations usage
- floor plans layout and production
- basic construction terminology and materials
- perspectives and pictorials
- typical wall and building sections with necessary details
- applicable building codes
- as-built floor plan measurement, sketching and drafting
- usage of schedules in freehand architectural style lettering
- styles of architecture
- fundamentals and design function in residential design
- site plans production
- foundation plan production

- AutoCAD basics for electrotechnology utilities applications, including:
  - operating system fundamentals encompassing principals, concepts and applications of CAD hardware; terms, conventions and codes related to CAD hardware; CAD hardware type and variation; system specifications interpretation and usage; input/output (I/O) devices identification; computer components installation and configuration arrangements and applications
  - CAD filing and naming conventions
  - opening program, closing and saving drawings
  - basic drafting commands encompassing line, circle, spline and rectangle
  - basic modification commands encompassing erasing, copy, mirror, block, trim and extend
  - layout and plotting
  - design centre encompassing electrical symbols and electronic symbols
  - AutoCAD and lists
  - components and symbols in CAD
  - mass storage and file compression
  - network operating systems, protocols, and cabling systems
  - researching hardware and software
  - installation and configuration of operating systems
  - plotting solutions
  - security issues
  - system maintenance
  - user interface
  - object creation and modification

- editing
- layers
- properties
- paper space and model space concepts
- dimensioning and dimensioning variables
- blocks
- attributes
- three-dimensional construction
- solid modelling and scripts
- library construction
- database manipulation
- data extraction
- circuit simulation
- wiring symbols - motor and generator; alternating current (a.c.) and direct current (d.c.) ; wiring junctions; grounds; distinguishing power and control conductors; normally open and normally closed contacts; series and shunt coils; circuit protection devices - overload relay w/thermal element; fuse and circuit breakers; push button - disconnect switches; momentary contact; maintained contact; meters; resistors; transformers - power, current, potential and auto-transformers

- auxiliary views and revolutions, including:
  - principles, concepts and purpose of auxiliary views and revolutions
  - terms, conventions and codes related to auxiliary views and revolutions
  - rules of revolutions
  - types and usage techniques of auxiliary views, auxiliary reference planes and revolutions
  - techniques and applications in finding the true size of an oblique surface
  - secondary auxiliary view drawing techniques and applications
  - applications of revolutions
  - usage of the axis of revolution to draw the true shape of an oblique view
- civil/geographic information systems (GIS) drawings fundamentals, including:
  - principles, terms and conventions usage in civil GIS drawings
  - land surveying techniques (e.g. property line, corners, symbols, coordinates, base line and typical sections)
  - GIS and global positioning systems (GPS) uses and applications
  - land survey plot production from a written description
  - manual and computer methods calculation of area
  - contour plans
  - profile drawings
- drawing, numbering, file names and digital file storage, including:
  - drawing series and version control
  - drawing sheet numbering
  - drawing file names

  - drawing storage
  - drawing file
- electrotechnology/utilities drafting fundamentals, including:
  - principles, concepts and purpose of electrotechnology/utilities drafting
  - terms, conventions and codes related to electrotechnology/utilities drafting
  - rules and symbols used in electrotechnology/utilities drafting
  - types and usage techniques of electrotechnology/utilities drawings
  - techniques and applications for creating graphic symbols charts
  - techniques and applications in composing block diagram drawings
- electrotechnology/utilities drawings and diagrams
- electrotechnology/utilities drawings line work, symbols, lettering and techniques production to Australian/New Zealand industry standards, including:
  - principles of correct drafting technique
  - principles, concepts and purpose of electrotechnology/utilities drawings
  - terms, symbols (including sectional symbols), conventions and codes related to electrotechnology/utilities drawings
  - rules for drafting electrotechnology/utilities drawings
  - types and usage techniques of electrotechnology/utilities drawings
  - relationship between components and symbols used in drafting applications
  - techniques and applications for production of electrotechnology/utilities drawings
- map drafting, including:
  - types and usage techniques of map drafting and illustrated maps
  - techniques and applications of plat surveys and set plans
  - techniques and applications of contour maps using profile coordinates
  - map reading techniques and applications
  - map drawing techniques and applications
- pole and structure elevations, including:
  - elevation sheet layout
  - elevation labelling
  - concrete bases
  - luminaire pole elevations
  - signal pole elevations
  - service pole elevations
  - sign pole elevations
  - sign bridge and cantilever elevations
  - breakaway sign structures
  - wood post/sign structures
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation

- relevant workplace policies and procedures
- risk control measures
- sketching techniques for electrotechnology/utilities applications, including:
  - lines and letters
  - shapes
  - solids
  - axonometric views
  - building sketch
  - isometric views
  - object sketch
  - perspective: building interior perspective sketch
  - detail labelled sketch
- standard drawing sheets and drawing sheet layout, including:
  - standard drawing sheet borders
  - standard drawing sheet scale
  - standard drawing sheet editing - routine
  - standard drawing sheet editing - title block
  - standard drawing sheet editing - revision blocks
  - drawing sheet layout for small electrotechnology/utilities projects
  - drawing sheet layout for large electrotechnology/utilities projects
  - drawing sheet layout for signing and markings projects
  - key plan sheets
  - drawing layers
  - line types
- survey base plan drawings, including:
  - survey base plan scale
  - survey base plan
  - survey base plan contents
  - model space and paper space
  - external reference (xref) drawings
  - viewports.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so;

where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0031 Prepare engineering drawings using manual drafting and CAD for electrotechnology applications

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to prepare engineering drawings using manual drafting and computer-aided design (CAD) for electrotechnology/utilities applications.

It includes planning and producing electrotechnology/utilities engineering drawings. It also includes completing, reporting electrotechnology/utilities engineering drawings as well as using manual drafting methods, CAD equipment and software from specifications, layouts, sketches or verbal instructions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECS0033 Use engineering applications software on personal computers

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1	**Plan electrotechnology/utilities engineering drawing**	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures are identified and applied
		1.2 Hazards are identified, risks are assessed and control measures are implemented
		1.3 Extent of work is determined from job specifications, discussions with relevant person/s, sketches, preliminary layouts and/or field investigations
		1.4 Relevant person/s is consulted to coordinate work
		1.5 CAD software, tools and equipment required for work are obtained in accordance with workplace procedures
2	**Produce electrotechnology/utilities engineering drawing**	**2.1** WHS/OHS risk control measures and procedures for carrying out the work are followed
		2.2 Design, drawings and layouts required are determined from job specifications
		2.3 Technical data of system components is interpreted to determine parameters included in drawings
		2.4 Relevant CAD software tools are used to produce drawings in accordance with workplace procedures
		2.5 Drawings are checked for accuracy and compliance with job specifications
		2.6 Unplanned situations are responded to in accordance with workplace procedures and approval with authorised person/s
3	**Complete and report electrotechnology/utilities engineering drawing**	**3.1** Completed drawings are submitted to relevant person/s and checked for accuracy and compliance with job specifications
		3.2 Modifications are followed and drawings re-submitted for final approval
		3.3 Completed drawings are filed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Preparation of electrotechnology/utilities engineering drawing using manual drafting and CAD applications must include:

- auxiliary views
- care and use of equipment
- descriptive geometry/revolutions
- development layouts
- dimensioning/size description and tolerancing
- drawings, including component drawings for fabrication, assembly and sub-assembly drawings, installation drawings, fault location aids such as flow diagrams and modifications (version control), and conversion between drawing types
- drawing reproductions
- engineering drafting specifications, layouts, sketches or verbal instructions in conformance with Australian Standards and enterprise standards for electrotechnology/utilities applications
- fabrication drawings
- geometric construction
- graphs and charts
- ink overlay drawings production
- layout drawings
- manual drafting methods, techniques, procedures and devices
- maps and profiles design
- mechanical, fabrication and fluid power
- multi-view orthographic projections
- organisational procedures for collaborating with the client, key stakeholders and other staff in the selection of the preferred option
- organisational procedures for preparation and production of drawings, drawing sets, specifications, drafting documentation and operating and maintenance instructions/manuals for products and

systems
- organisational procedures for processing, filing and saving all graphics, specifications, instructions and related documentation in correct format and location in accordance with worksite procedures
- pattern development
- pictorial drawings
- pipe/plumbing drawings
- safety precautions when working with CAD equipment
- sectional views/conventions
- sketching methods, techniques, procedures and devices including freehand sketching
- specifications obtained from design information, customer requirements, sketches, preliminary layouts and/or field investigations
- structural steel and sheet metal drawings
- technical drawing equipment, including CAD applications, peripherals and devices
- technical illustrations
- thread representations
- type, form and size of materials from information, abbreviations and symbols supplied on electrotechnology/utilities related engineering drawings, briefs and/or specifications
- working drawings

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE190A Prepare engineering drawings using manual drafting and CAD for electrotechnology/utilities applications.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0031 Prepare engineering drawings using manual drafting and CAD for electrotechnology applications

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying modifications to original drawings and resubmitting for approval
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including implementing risk control measures
- checking drawings for accuracy and compliance with job specifications
- completing and reporting electrotechnology/utilities engineering drawings
- determining job specifications from designs, drawings and layouts
- filing completed drawings
- obtaining specifications from design information, customer requirements, sketches, preliminary layouts and/or field investigations
- planning and producing electrotechnology/utilities engineering drawings
- preparing and modifying preliminary electrotechnology/utilities drawings and diagrams using computer-aided design (CAD) equipment and software
- responding to unplanned situations
- submitting completed drawings
- using CAD equipment and related computer commands
- working with relevant person/s.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- drawing fundamentals, including:
  - principles, purpose and classification of drawings
  - basic drawing terms and conventions
  - symbols, codes and abbreviations used in drafting drawings
  - tools and equipment used in drafting drawings

- drawing forms; sheet size and format, metric, imperial and copy fold information
- drawing routines, signatures, approvals, dates, numbers and numbering systems, design considerations/specifications, materials or component specifications, lists, titles, proprietary information, fasteners, representations, notes, charts and graphs, modifications and revision conventions
- fundamentals of drafting documentation, including contents, version control, indexing and product identification (e.g. logo, trademark and software warning plates)
- delineation: line conventions and lettering, multi- and sectional view drawings, pictorial drawings, types and application of engineering drawings, conventional representations, microfilming, descriptive geometry and revolutions
- measurements: types, forms, units, symbols, reading and transfer
- sketching techniques (e.g. freehand lettering)
- basic drafting skills (e.g. drafting by hand, working with triangles, and working with a T square)
- basic drawing layout (e.g. borders and information blocks)
- line types and weights
- geometric construction principles
- use of drawing instruments and equipment to produce basic technical drawings
- drawings instruments and media usage
- usage of reproducible drawings with mechanical pencils

- lettering, including:
  - principles, concepts and applications of lettering
  - terms, conventions and codes related to lettering
  - construction of vertical or inclined, single-stroke gothic lettering, numerals and fractions, including proper spacing and guidelines
  - proper lettering instruments selection
  - usage of lettering techniques for notes and titles on drawings
  - text style, text composition, and text placement selection and application
- sketching, including:
  - principals, practices and rules for sketching in relation to proportion, placement of the views, and drawing medium
  - concepts and applications of sketching
  - terms, conventions and codes related to sketching
  - sketches used in industry
  - usage of sketching aids for creative communication
  - sketching types and their applications
  - line techniques in sketching simple objects
  - estimation and proportion techniques usage
  - views selection for requisite applications
  - blocking technique for size, shape and details
  - surface shading techniques

- geometric construction, including:
  - principles, concepts and applications of geometric construction
  - terms, conventions and shapes related to geometric construction
  - drawing techniques of lines, angles, circles, arcs, tangents and polygons
  - geometric construction to single-view and multi-view drawings
  - graphic geometric controls
  - intermediate CAD commands
  - plotting and printing equipment set-up and configuration
- multi-view orthographic projections and Australian/New Zealand and industry standards, including:
  - principals of multi-view orthographic projections
  - terms, conventions and codes related to multi-view drawings
  - applications and use of orthographic projections/drawings (e.g. 3rd angle)
  - types and usage techniques of orthographic projection
  - sketching techniques related to orthographic views
  - rules for orthographic projection
  - working drawing problems and specifications
  - views visualisation and selection
  - 1st and 3rd angle projection drawings
  - lines, lettering, and drawing medium types
  - fractional, decimal, and metric equations solutions
  - concepts of units of measurement usage related to multi-view orthographic projections
  - sectional and/or auxiliary views uses, identification and analysis
  - rules for sections and auxiliary views
  - geometric figures visualisation and drawing in two dimensions
  - geometric figures classification and comparison
  - circle properties and relationships, and circle problem solving
  - drawing from a view of a model (e.g. orthographic projection)
- auxiliary views, including:
  - principles, terms and conventions usage in auxiliary views
  - use and application of auxiliary views
  - primary auxiliary view construction
  - secondary auxiliary view construction
- descriptive geometry/revolutions, including:
  - principles, terms and conventions usage in descriptive geometry/revolutions
  - graphic solutions of points, lines and planes
  - graphic solutions of intersections (e.g. lines, planes and solids)
  - true length of lines, bearing and slope of lines
  - graphic solutions of solids
  - drawings construction using the revolution method

- sectional views/conventions, including:
  - principles, terms, symbols and conventions of sectional views
  - use and application of sectional views
  - drawing standard sectional views
  - use of conventional breaks
  - symbols used to represent different materials
  - use of cutting plans
- pictorial drawings introduction and production to Australian/New Zealand and industry standards, including:
  - principals, concepts and applications of pictorial drawings
  - terms, symbols, conventions and codes usage in pictorial drawings
  - types and usage techniques of pictorial drawings
  - line of sight application
  - isometric view usage
  - pictorial drawing types, usage and selection
  - pictorial drawings sketching
  - pictorial working drawing problems and specifications
  - axonometric, oblique and perspective drawings construction
  - calculations in projection plane angles
  - standards for drawing pictorial drawings
  - application of properties and relationships of triangles to solve geometric shapes
  - conversion of an angular dimension of an orthographic to a linear dimension in a pictorial drawing
  - drawing techniques of pictorial representations
- dimensioning/size description and tolerancing as applied to drafting, including:
  - principles, terms, symbols and conventions used in dimensioning and tolerancing
  - terms, conventions and codes related to dimensioning
  - dimensioning drawing construction using Australian/New Zealand Standards
  - types and usage techniques of dimensioning
  - application of dimensioning to object drawings
  - geometric dimensioning and tolerancing
  - lines used in dimension drawings construction
  - dimensioning practices applications
  - dual dimensioning
  - tolerancing applications
  - dimensioning verification requirements
  - formulas for positional tolerancing
  - form, orientation, profile and runout
- development layouts of various shaped objects to Australian/New Zealand and industry standards, including:

- principals and concepts of development layouts of various shaped objects
- terms, conventions and codes related to surface developments
- surface development uses in Australian/New Zealand and industry standards
- basic three-dimensional geometric shapes visualisation in a two-dimensional plane
- cut out and construct models for checking accuracy
- rules to surface developments to produce stretch-outs

- layout drawings production to Australian/New Zealand and industry standards, including:
  - principals, concepts and applications of layout drawings
  - terms, conventions and codes related to layout drawings
  - layout drawings types and differences
  - rules for layout drawings
  - concepts of units of measurement usage related to layout drawings
- technical illustrations drawing to Australian/New Zealand and industry standards, including:
  - principals, concepts and purpose of technical illustrations
  - terms, conventions, symbols and codes related to technical illustrations
  - types and usage techniques of illustrations
  - rules for technical illustration application
  - techniques and applications for creating illustrations
  - illustration types usage and selection
  - illustration working drawing problems and specifications
  - techniques and applications in the use of drawing instruments to prepare illustrations
  - surface shading purpose and types, selection and analysis
  - techniques and applications in airbrush renderings to detailed illustrations
  - techniques and applications of CAD practices to technical illustrations
  - techniques and applications of line-shaded illustrations
  - concepts of units of measurement usage related to illustrations
  - solutions for illustrations using fractional, metric and decimal equations
- graphs and charts production to Australian/New Zealand and industry standards, including:
  - principals, concepts and applications of basic graphs, charts and diagrams production
  - terms, conventions and codes related to basic graphs, charts and diagrams production
  - graphs, charts and diagrams production types, usage and variations
  - data configuration for graphic representation
  - graph type selection per specifications and data
  - basic graphic charts and diagrams interpretation
  - charts and diagrams construction
- thread representations, including:
  - principles, concepts and applications of threaded fasteners
  - terms, conventions and codes related to threaded fasteners
  - types and usage techniques of threaded fasteners

    - drawing of threads using simplified and schematic types of thread representation
- working drawings, including:
    - principles, concepts and applications of working drawings
    - terms, conventions and codes related to working drawings
    - types and usage techniques of working drawings
    - title block, bill of materials and schedules used in working drawings
    - working drawing production requirements
- care and use of equipment, including:
    - principles, concepts and applications of various drafting instruments, equipment and materials
    - types and usage techniques of drafting instruments, equipment and materials
    - drawing materials selection for specific types of drafting projects
    - drawing instruments usage as a means of technical drawings preparation for accuracy and readability
    - CAD station components identification
    - CAD set-up requirements to complete a basic drafting problem
- CAD basics, including:
    - principles, terms, symbols and conventions usage in CAD
    - concepts and applications of CAD and related application commands
    - types of CAD hardware
    - CAD standards, including file presentation; layering standards; sorting graphic data, including data groups, principal data and supporting data; layering naming convention;, colour assignment standard (layer colours and pen weights); provision for creation of new layers; blocks standards - real blocks object, common block objects, symbol objects, block library and block naming; text style standards - text styles naming, text height; dimension styles standards - dimension style naming; line-type (LT) standards; title blocks and graphic scales - title block set-up, information title blocks, drawing scales; systems of measurement and preferred scales - drawing scales
    - disk operating system (DOS) and windows application definitions
    - techniques and practices in the application of program assist and editing commands
    - view and display commands (e.g. zooming and panning)
    - query commands to extract drawing data
    - techniques and practices in the application of changes to text styles, text entering and editing
    - existing drawing modifications
    - working with multiple drawings using cut and paste, and so on
    - components and symbol libraries creation, editing and retrieval
    - plotting drawings to the proper scale
    - scaling techniques applications
    - layering techniques applications
    - LT scale usage

- drawing techniques application
- drawing setups to applicable standards (e.g. settings, layers, line types and widths)
- two-dimensional drawing creation
- cartesian, polar, absolute, and relative coordinates usage in drawing lines and shapes
- techniques and practices in the application of geometric construction
- techniques and practices in the application of text to a drawing
- techniques and practices in altering font options
- techniques and practices in the application of laying out, drawing and completing orthographic drawings
- techniques and practices in the application of drawing objects in isometric using isometric drawing commands
- techniques and practices in the application of completing primary auxiliary drawings on CAD equipment
- techniques and practices in the application of CAD to draw screw threads
- techniques and practices in the application of making, setting and using layers and blocks

- basic production fabrication drawings to Australian/New Zealand and industry standards, including:
  - principles, terms, symbols, codes and conventions usage in production of fabrication drawings
  - types and usage techniques of detailed and assembly drawings
  - detailing: including principals, concepts and applications of detailing; terms, conventions and codes related to detailing; detailing types, application and selection; different fabrication processes and identification of machine parts; rules for drawing machine part details; concepts of units of measurement usage related to detailing; application of properties and relationships of triangles and circles to solve geometric shapes related to detailing
  - assembly drawings: including principals, concepts and applications of assembly drawings; terms, conventions and codes related to assembly drawings; different assembly processes and identification of machine part assemblies; rules for drawing assembly drawings; concepts of units of measurement usage related to assembly drawings; application of properties and relationships of triangles and circles to solve geometric shapes related to assembly drawings
  - machine assembly drawing production
  - detail drawings standard machine fits applications
  - drawings for welded component parts
  - parts list (e.g. balloons) development
  - file and/or drawing for CAD/computer-aided manufacturing (CAM) applications
  - gears drawings
  - CAM drawings
  - threads and fasteners (e.g. bolts, pins and keys) use and applications
  - drawings for metal bending and fabricating
  - standard fits, finishes, and tolerances to a machine drawing application

  - manufacturing processes (e.g. machine, metal forming and computer numerically controlled (CNC))
- pattern development, including:
  - principles, concepts and purpose of pattern development
  - terms, conventions and codes related to pattern development
  - types and usage techniques of pattern development and related drawings
  - application of pattern development and intersection techniques
  - intersections of geometric surfaces development techniques and applications
  - flat surfaces development techniques and applications
  - construct of objects from the intersection
- maps and profiles design and production to Australian/New Zealand and industry standards, including:
  - principals, concepts and applications of maps and profiles design and production
  - terms, conventions and codes related to maps and profiles design and production
  - maps and profiles design and production types and uses
  - rules for cartography
  - components selection and transit usage
  - symbols usage and applications for topography
  - application of properties and relationships of triangles to solve geometric problems, trigonometric relations to solve right triangles, law of sines and cosines to solve triangles
- pipe/plumbing drawing basics, including:
  - principles, purpose, terms and conventions usage in pipe/plumbing drawings
  - applicable codes, symbols and abbreviations
  - piping symbols, fittings, fixtures and valves
  - types of piping systems and usage techniques in pipe drawings
  - principles of pneumatics and hydraulics
  - pneumatics and hydraulic schematics production
  - plumbing schematics production
  - techniques and applications in creating drawings of piping symbols and systems
- structural steel, welding and sheet metal drawing basics, including:
  - principles, terms and conventions usage in structural steel, welding and sheet metal drawings
  - applicable codes (e.g. WHS/OHS, Standards Australia/New Zealand, building codes and regulations, related standards and codes)
  - classification of major structural and welding components
  - rules and symbols used in structural and welding drawings
  - structural steel shapes
  - steel-framing materials
  - detail and assembly drawings (including beam connections) with bill of materials
  - steel frame plan drawings production

  - types and usage techniques of structural and welding drawings
  - techniques and applications in creating structural drawings using measuring, labelling, and symbol procedures
  - techniques and applications used in drafting the processes for joining metal and standard symbols for welding
  - techniques and applications in creating welding drawings complete with weld symbols
  - sheet metal layout methods and procedures
  - representative sheet metal drawings
  - sheet metal drawings for CAD/CAM applications
- ink overlay drawings produced to Australian/New Zealand and industry standards, including:
  - principals, concepts and applications of ink overlay drawings production
  - terms, conventions and codes related to ink production
  - drawing specifications identification and analysis
  - rapid graph equipment usage procedures
- drawings reproductions to Australian/New Zealand and industry standards, including:
  - principals, concepts and applications of drawing reproductions
  - terms, conventions and codes related to processes related to drawing reproductions
  - rules for reproducing drawings
  - various machines usage and selection in the reproduction process
- CAD software and functions
- drawing fundamentals
- electrotechnology/utilities engineering drawings and diagrams
- relevant risk mitigation processes including risk control measures
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- sketching techniques.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0032 Produce detailed electrotechnology/utilities drawings using CAD equipment and software

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to produce detailed electrotechnology/utilities drawings using computer-aided design (CAD) equipment and software.

It includes planning, producing and completing detailed electrotechnology/utilities drawings. It also includes modification and maintenance of detailed electrotechnology/utilities drawings and diagrams using CAD equipment and software from specifications, layouts, sketches or verbal instructions

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECS0033 Use engineering applications software on personal computers

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEECD0031 Prepare engineering drawings using manual drafting and CAD for electrotechnology applications

UEECD0030 Prepare electrotechnology/utilities drawings using manual drafting and CAD equipment and software

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan detailed electrotechnology/utilities drawing	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures are identified and applied
	1.2 Hazards are identified, risks are assessed and control measures are implemented
	1.3 Extent of work is determined from job specifications and discussions with relevant person/s
	1.4 Relevant person/s is consulted to coordinate work
	1.5 CAD software, tools and equipment for work are obtained in accordance with workplace procedures
2 Produce detailed electrotechnology/utilities drawing	**2.1** WHS/OHS risk control measures and procedures for carrying out the work are followed
	2.2 Design, detailed drawings and layouts required are determined from job specifications
	2.3 Technical data of system components is interpreted to determine parameters included in detailed drawings
	2.4 Relevant CAD software tools are used to produce detailed drawings based on standard protocols
	2.5 Detailed drawings are checked for accuracy and compliance with job specifications
	2.6 Unplanned situations are responded to in accordance with workplace procedures and approval with authorised person/s
3 Complete detailed electrotechnology/utilities drawing	**3.1** Completed detailed drawings are submitted to relevant person/s and checked for accuracy and compliance with job specifications

3.2 Modifications are followed and detailed drawings re-submitted for final approval

3.3 Completed detailed drawings are filed in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Producing detailed electrotechnology/utilities drawings using CAD equipment and software must include:

- detailed circuit and wiring diagrams/schedules, block diagrams, schematics, printed circuit board (PCB) layouts, assembly and installation drawings, modification drawings, and conversion between drawing types
- electrotechnology/utilities specifications, layouts, sketches or verbal instructions in conformance with Australian Standards, enterprise standards and/or design brief
- master sketches methods, techniques, procedures and devices including freehand sketching
- type, form and size of materials from information, abbreviations and symbols supplied on electrotechnology/ utilities engineering drawings, briefs and/or specifications
- specifications may be obtained from design information, customer requirements, sketches, preliminary layouts and/or field investigations
- materials and equipment used in electrotechnology/ utilities engineering applications by selecting the correct type, form and size of materials and equipment from information, abbreviations and

symbols supplied on detailed electrotechnology/ utilities engineering drawings, briefs and/or specifications
- advanced CAD equipment commands and drawing techniques and processes
- CAD application programs and advanced tools
- utility programs disk and file management
- filing systems management including entering/retrieving technical information from computer-related database programs for the production, modification and/or maintenance of detailed electrotechnology/ utilities drawings
- safety precautions when working with CAD equipment
- detailed working drawings
- drafting/modelling electrotechnology/ utilities
- detailed electrotechnology/utilities drawings including a representative array of relevant 2-D and 3-D CAD drawings
- single and multi-part components and detailed electrotechnology utilities assemblies for fabrication, assembly, installation and/or modification of products including dimensions including dimensions; fabrication, assembly, installation and/or modification notes, circuit/wiring layouts/schedules and parts lists from specified dimensions, associated tolerances and design specifications.
- architectural drawings for electrotechnology/utilities applications
- organisational procedures for preparation and production of drawings, drawing sets, specifications, drafting documentation and operating and maintenance instructions/manuals for products and systems
- organisational procedures for processing, filing and saving all graphics, specifications, instructions and related documentation in correct format and location in accordance with work site procedures
- organisational procedures for collaborating

with the client, key stakeholders and other staff in the selection of the preferred option

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE192A Produce detailed electrotechnology/utilities drawings using computer aided design equipment and software

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0032 Produce detailed electrotechnology/utilities drawings using CAD equipment and software

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying modifications to original drawings and re-submitting for approval
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements including implementing risk control measures
- checking drawings for accuracy and compliance with job specifications
- determining job specifications from designs, drawings and layouts
- filing completed drawings
- preparing, producing and completing detailed electrotechnology/utilities drawings
- producing detailed electrotechnology/utilities drawings using computer-aided design (CAD) equipment and software
- responding to unplanned situations
- submitting completed drawings
- working with relevant person/s.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- detailed working drawings, including:
  - definition of detailed working drawings
  - usage and types of detailed working drawings
  - composition and layout of detailed working drawings
  - preparation of detailed working drawings
- advanced (master) sketching techniques, including:
  - lines and letters
  - shapes

- solids
- axonometric views
- building sketch
- isometric views
- object sketch
- perspective: building interior perspective sketch
- detail labelled sketch
- complex surfaces with tangent and curvature continuities
- surfaces manipulation using editing tools
- surfaces analysis for quality and desired characteristics

- drafting/modelling electrotechnology/utilities, including:
  - standard documentation practices for block diagrams
  - wiring diagrams
  - circuit schematics
  - control circuits
  - creating one-line diagrams
  - standard printed circuit board (PCB) layouts
  - printing wiring assemblies
  - art masters
- electrotechnology/utilities related drawings, including:
  - charts and graphs, including alternating current (a.c.), frequency, electromagnetisms, signals and transmission
  - measuring devices and gauges
  - power sources, transformers, alternators, motors and related applications
  - earthing
  - conduits, boxes and fittings, harnesses, cable trays and ducts
  - conductor terminations, splices, installations and wiring schedules
  - busways
  - electric services installations
  - protection devices -over current and voltage, circuit breakers and fuses
  - switches, contactors and relays
  - control systems and devices
  - high voltage (HV) devices and apparatus
  - cabinet and panel layouts
  - plot and floor plans
  - electric lighting
  - analogue and digital systems, circuits, electronic components and devices - connections; resistors; capacitors; magnetic devices; piezoelectric devices; crystals and resonators; transducers, sensors and detectors; solid state components and semiconductors; display technologies filament; light-emitting diode (LED); liquid crystal display (LCD), discharge devices; thermionic valves; vacuum tubes; assemblies and modules;

prototyping aids and mechanical accessories
    - data networks, communication and telecommunications equipment and devices
    - pneumatic and hydraulic circuits, including related piping ware and components
- AutoCAD functional for electrotechnology/utilities, including:
    - user coordinates systems
    - right-hand rule
    - 2-D geometry extrusion
    - 2-D views from 3-D models and visa-versa
    - user coordinate systems creation
    - 3-D wireframe geometry creation
    - 3-D faces on wireframe geometry placement
    - 3-D geometry viewing
    - surfaces construction
    - working drawings generation
    - drawing set up using model space and paper space, including printing and plotting
    - plotting
    - rendering
    - 3-D models construction
    - 3-D surface models construction
    - 3-D models display from different vantage points
    - orthographic drawings constructed from 3-D models
    - rendered images creation
    - solid modelling construction using Boolean operations
    - scripts writing and tool button macros application
    - organisation of writing scripts and tool button macros commands
    - advanced drawing, editing, and configuration procedures application
    - basic user-level system customisation
    - design environment
    - basic workflow
- AutoCAD project basics, including:
    - project manager
    - project drawing list
    - projects progression/stages
    - projects copy and activation
- AutoCAD schematic wiring, editing, components and reporting, including:
    - wiring and ladders
    - wire types and wire numbers
    - source and destination signal arrows
    - multiple phase and multi wire circuits

  - circuits
  - connectors and point-2-point wiring
  - basic editing utilities
  - miscellaneous tools
  - data tools
  - re-sequence and re-tag drawings
  - using the auditing tools
  - schematic symbol annotation
  - inserting schematic symbols
  - swapping and updating blocks
  - inserting schematic components from lists
  - generating schematic reports
- AutoCAD panel layouts, including:
  - creating panel layouts from schematic lists
  - din rail utility usage
  - panel footprints
  - terminal strip editor usage
  - panel layout annotation and reports
- AutoCAD programmable logic controller (PLC) modules, including:
  - PLC input/output (I/O) modules
  - PLC modules builder
  - PLC database file editor, including insert and edit in parametric PLC modules, non-parametric PLC modules and stand-alone PLC I/O points
  - PLC I/O address-based tagging
  - spreadsheet to PLC I/O utility
- AutoCAD detailed settings and configurations advanced commands, including:
  - drawing properties
  - project properties
  - creating wire types
  - reference files usage
  - creating drawing templates
  - installation and search paths
- AutoCAD detailed customised components and customised detailed data, including:
  - schematic symbols
  - icon menu system
  - panel footprints
  - part catalogue databases usage
  - pin list database editor
  - title block update and attributes
  - terminal properties editor

    - reference files usage
- AutoCAD advanced auditing tools, automation tools and integration, including:
    - auditing tools
    - troubleshooting tools
    - updating schematics from spreadsheets
    - generating automatic reports
    - AutoCAD integration
    - din rail editor
    - footprint with wire annotation
    - conduit tools
    - cables management
- AutoCAD database management and productivity tools, including:
    - title block attributes automation tools update
    - schematics update spreadsheets
    - adding wire data to footprints
    - managing cables
    - using the circuit builder
    - working with peer-to-peer
- drawings production using CAD application programs, including:
    - principals, concepts and applications of drawings production using CAD application programs
    - terms, conventions and codes related to drawings production using CAD application programs
    - drawing production types using CAD application programs
    - CAD advanced commands identification and application for drawings
    - CAD advanced commands identification and application for editing drawings
    - CAD advanced commands identification and application for hardcopy drawings
    - techniques and applications in producing detailed architectural drawings of a floor plan, elevation, and exterior wall section for a residential structure related to electrotechnology/ utilities applications
- T15 utility programs disk and file management, including:
    - principals, concepts and applications of disk and file management of utility programs
    - terms, conventions and codes related to disk and file management of utility programs
    - disk operating system commands identification and usage
    - utility commands identification and usage
    - commands for word processing identification and usage
- CAD information technology
- detailed electrotechnology/utilities drawings
- relevant manufacturer specifications
- relevant risk mitigation processes include risk control measures

- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0036 Provide engineering solutions for problems in complex multiple path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to provide engineering solutions for problems in complex multiple path circuits.

It includes preparing tools, equipment and materials; and providing solutions for complex multiple path circuits. It also includes completing work and documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare tools, equipment and materials for problem solving	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures for a given work area are identified, obtained and applied
	1.2 WHS/OHS risk control work preparation measures and workplace procedures are followed

	1.3	Scope of circuit/s problems are obtained from documentation and/or work instructions to determine the work
	1.4	Advice is sought from the work supervisor to ensure the work is coordinated with others
	1.5	Materials required for work are identified and accessed in accordance with workplace procedures
	1.6	Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
2 Provide solutions for complex multiple path circuits	**2.1**	WHS/OHS risk control work measures and workplace procedures are followed
	2.2	Inspect and test live work is conducted in accordance with WHS/OHS requirements and workplace procedures
	2.3	Circuits are checked and isolated as required in accordance with WHS/OHS requirements and workplace procedures
	2.4	Methods used to solve circuit problems are used from measured and calculated values as they apply to complex multiple path circuits
	2.5	Unplanned situations are dealt with in accordance with WHS/OHS and approval of a relevant person
	2.6	Problems are solved without damage to apparatus, circuits, the surrounding environment and/or services using sustainable energy practices
3 Complete work and documentation	**3.1**	WHS/OHS work completion risk control measures and workplace procedures are followed
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Justification for solutions used to solve circuit problems is documented
	3.4	Work completion is documented and relevant person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Solving circuit problems must include at least two of the following:	• determining the operating parameters of an existing circuit • altering an existing circuit to comply with specified operating parameters • developing circuits to comply with a specified function and operating parameters • developing circuits to comply with specified functions using established methods

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE125A Provide engineering solutions for problems in complex multiple path circuits.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0036 Provide engineering solutions for problems in complex multiple path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- analysing complex multiple path circuits
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including
  - using risk control measures
- completing work and documenting problem-solving activities
- completing written justification of solutions
- coordinating work with others
- dealing with unplanned events in accordance with problem-solving techniques and workplace procedures
- determining the operating parameters of existing circuits
- inspecting and testing active systems
- obtaining and following work instructions
- obtaining and using tools, equipment and products
- preparing to solve problems in complex multiple path circuits
- providing effective solutions to circuit problems from measurements and calculations
- providing solutions for problems in complex multiple path circuits
- using sustainable energy practices in accordance with workplace procedures
- using testing devices.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- complex alternating current (a.c.) power and maximum power transfer theorem
- complex impedance
- mesh and nodal analysis for a.c. linear circuits
- mesh and nodal analysis for direct current (d.c.) linear circuits

- Norton's principles for d.c. linear circuits
- phasors
- problem-solving techniques
- relevant complex multiple path circuits
- relevant industry standards
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications and operating instructions
- relevant materials, tools, equipment, product and testing devices
- relevant sustainable energy principles
- relevant tools, equipment and products
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace instructions, policies and procedures
- series and parallel a.c. linear circuits
- star-delta conversions
- superposition principles and Kirchhoff's law applied to a.c. linear circuits
- superposition principles for d.c. linear circuits
- Thévenin and Norton theorems applied to a.c. linear circuits
- Thévenin's principles for d.c. linear circuits
- transients
- voltage/current sources and Kirchhoff's law for d.c. linear circuits.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, facilities, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to solving problems in complex multiple path circuits.
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0039 Provide solutions to basic engineering computational problems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to provide solutions to engineering computational problems.

It includes applying problem-solving techniques, using a range of mathematical processes and completing documentation.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Provide computational solutions to engineering problems	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures for a given work area are identified, obtained and applied
	1.2 Scope of problem/s is obtained from documentation and/or from work instructions to determine work

	1.3	Problems are documented and/or diagrammatic form and appropriate methods identified to resolve them
	1.4	Constants and variables to the problem are obtained from measured values and/or problem documentation
	1.5	Alternative methods for resolving the problem are considered and, as required, discussed with relevant person/s
	1.6	Problems are resolved using mathematical processes in accordance with workplace procedures
2 Complete work and documentation	**2.1**	Justification for solutions used to solve engineering problems is documented in work records in accordance with workplace procedures and relevant industry standards
	2.2	Work completion is documented and relevant person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Engineering diagnosis development and work functions must include at least the following:

- working safety
- applying problem-solving techniques
- using a range of mathematical processes
- provision of electrical/electronic engineering problem solutions
- solutions justification

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE126A Provide solutions to basic engineering computational problems.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0039 Provide solutions to basic engineering computational problems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including
  - using risk control measures
- completing work and documenting problem-solving activities
- dealing with unplanned events in accordance with problem-solving techniques and workplace procedures
- documenting justification of solutions provided
- obtaining known constants and variables
- solving problems using appropriate mathematical processes
- stating problems in documented and diagrammatic form.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- algebraic manipulation
- complex numbers
- estimations, errors and approximations
- exponential and logarithmic functions
- graphs of linear functions
- graphs of trigonometric functions
- laws of indices
- matrices
- plane figures - quadrilaterals and circles
- plane figures – triangles and basic trigonometry
- problem-solving techniques
- quadratic functions

- rational, irrational numbers and algebra
- relevant manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace instruction, policies and procedures
- simultaneous equations
- vectors and phasors.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, facilities, tools and equipment currently used in industry
- resources that reflect current industry practices in relation to providing computational solutions to basic engineering problems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0044 Solve problems in multiple path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to solve problems in multiple path circuits.

It includes working safely; applying problem-solving procedures, including the use of voltage, current and resistance measuring devices; and providing solutions derived from measurements and calculations to predictable problems in multiple path circuits.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0046 Solve problems in single path circuits

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work on multiple path circuits	**1.1** Scope of work to be undertaken is determined from relevant documentation, electrical drawings or relevant person/s
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) workplace procedures for a given work

		area are identified and applied
	1.3	Electrical hazards are identified, risks are assessed, and control measures are implemented
	1.4	Advice is sought from the relevant person/s to ensure the work is coordinated effectively with others
	1.5	Materials required for work are identified and accessed in accordance with workplace procedures
	1.6	Tools, equipment and testing devices needed to carry out work are obtained and checked for correct operation and safety
2 Solve multiple path circuit problems	**2.1**	The need to test or measure live is determined in accordance with WHS/OHS requirements and when necessary conducted in accordance with workplace procedures
	2.2	Circuits are checked as isolated in accordance with workplace procedures and regulatory requirements
	2.3	Expected circuit parameters are calculated from relevant component ratings/specifications
	2.4	Circuit parameters are measured in accordance with industry standards and checked against expected values
	2.5	Circuit problems are assessed using measured and calculated values as they apply to multiple path circuits
	2.6	Circuit solutions are determined from measured and calculated values of resistance, voltage, current and power in extra-low voltage (ELV) multiple path circuits
	2.7	Solutions are tested in accordance with workplace procedures and industry standards
	2.8	Problems are resolved without damage to equipment, circuits, the surrounding environment or services using sustainable energy practices
	2.9	Unplanned situations are responded to in accordance with workplace procedures, in a manner that minimises risk to personnel and equipment
3 Complete work and document problem-solving activities	**3.1**	WHS/OHS work completion risk control measures and procedures are followed

3.2 Worksite is cleaned and made safe in accordance with workplace procedures

3.3 Justification for solutions used to resolve circuit problems is documented

3.4 Work completion is documented, electrical drawings are updated, and relevant personnel are notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Installation, fault finding, maintenance or development work functions in multiple path circuits must be demonstrated in one of the following disciplines:

- computers
- data communications
- electrical
- electronics
- fire protection
- instrumentation
- refrigeration and air conditioning
- renewable and sustainable energy systems
- security technology

Unit Mapping Information

No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0044 Solve problems in multiple path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures, including:
  - identifying and assessing hazards and risks
  - implementing control measures
  - safely measuring the parameters for the whole or any part of a d.c. circuit
- working safety with electric circuits in the electrotechnology sector, including:
  - checking circuits are isolated in accordance with workplace procedures and regulatory requirements
  - applying protections against the physiological effects of electrical currents
- calculating values of voltage, current and resistance in single source series/parallel circuits given any two of these quantities
- calculating power in single source series/parallel circuits from known values of voltage, current and/or resistance
- connecting a parallel circuit: power supply, protection device, switch and loads
- connecting a series/parallel circuit: power supply, protection device, switch and loads
- measuring values of voltage and current in single source ELV series/parallel circuits
- measuring values of resistance, including insulation resistance and continuity/no continuity
- measuring values of capacitance
- testing capacitors to determine serviceability
- altering an existing circuit to comply with specified operating parameters
- developing circuits to comply with a specified function and operating parameters
- using methodical techniques to solve circuit problems from measured and calculated values
- ensuring compliance with relevant Australian Standards and legislation
- completing work and documenting activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of

the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- factors affecting resistance, including:
  - four factors that affect the resistance of a conductor (type of material, length, cross-sectional area and temperature)
  - affect the change in the type of material (resistivity) has on the resistance of a conductor
  - affect the change in 'length' has on the resistance of a conductor
  - affect the change in 'cross-sectional area' has on the resistance of a conductor
  - effects of temperature change on the resistance of various conducting materials
  - effects of resistance on the current-carrying capacity and voltage drop in cables
  - techniques for calculation of the resistance of a conductor from factors such as conductor length, cross-sectional area, resistivity and changes in temperature
  - using digital and analogue ohmmeter to measure the change in resistance of different types of conductive materials (copper, aluminium, nichrome and tungsten) when those materials undergo a change in type of material length, cross-sectional area and temperature
- series/parallel circuits including:
  - schematic diagram of a single source d.c. series/parallel circuit
  - identification of the major components of a series/parallel circuit (power supply, protection device, switch and loads)
  - applications where series/parallel circuits are used in the electrotechnology industry
  - characteristics of a series/parallel circuit (load connection, current paths, voltage drops, power dissipation, and effects of an open circuit in a series/parallel circuit)
  - relationship between voltages, currents and resistances in a bridge network
  - calculation of the total:
    - resistance of a series/parallel circuit
    - current of a series/parallel circuit
    - voltage and the individual voltage drops of a series/parallel circuit
  - techniques for setting up and connecting a single source d.c. series/parallel circuit
  - resistance, voltage and current measurements in a single source d.c. series/parallel circuit
  - the voltage, current, resistances or power dissipated from measured values of any two of these quantities
- parallel circuits including:
  - schematic diagram of a single source d.c. parallel circuit
  - identification of the major components of a parallel circuit (power supply, protection device, switch and loads)
  - applications where parallel circuits are used in the electrotechnology industry
  - characteristics of a parallel circuit (load connection, current paths, voltage drops, power dissipation, and effects of an open circuit in a parallel circuit)
  - relationship between currents entering a junction and currents leaving a junction
  - relationship between branch currents and resistances in a two-branch current divider

network
    - methods to calculate total:
        - resistance of a parallel circuit
        - current of a parallel circuit
        - voltage and the individual voltage drops of a parallel circuit
    - techniques for setting up and connecting a single source d.c. parallel circuit
    - resistance, voltage and current measurements in a single source parallel circuit
    - voltage, current, resistance or power dissipated from measured values of any of these quantities
    - output current and voltage levels of connecting cells in parallel
- meters in a circuit, including:
    - types, operating characteristics and purpose of instruments/meters used to measure voltage, current, resistance and insulation resistance
    - advantages and disadvantages of different instruments/meters commonly used in the field
    - hazards involved in using electrical instruments/meters and relevant safety control measures
    - techniques to correctly connect and accurately read instruments/meters used in the field and common errors that may occur when connecting and reading meters
    - consequences of incorrect connection of instruments/meters into a circuit
    - techniques for calculation of resistance values using voltmeter and ammeter reading
- resistance measurement, including:
    - types, operating characteristics, purpose and storage of instruments to measure resistance (including insulation resistance)
    - functions of various analogue and digital insulation resistance testers
    - reasons why the supply must be isolated prior to using the insulation resistance tester
    - where and why the continuity test and insulation resistance test would be used in an electrical installation
    - the voltage ranges of an insulation resistance tester and where each range may be used
    - AS/NZS 3000 requirements for resistance measurement/testing
    - purpose and method to carry out a calibration check on an resistance tester
    - techniques for measurement of:
        - low values of resistance using a resistance tester continuity functions
        - high values of resistance using a resistance tester insulation resistance function
        - resistance using volt-ammeter methods
- capacitors and capacitance including:
    - techniques for identification of various types of capacitors commonly used in the electrotechnology industry
    - circuit symbol of various types of capacitors: standard, variable, trimmer and polarised
    - terms and units for capacitance and electric charge
    - behaviour of a series d.c. circuit containing resistance and capacitance components. - charge and discharge curves

  - techniques for calculation of quantities from given information: capacitance, charge and voltage
  - techniques for calculation one time constant as well as the time taken to fully charge and discharge a given capacitor
  - techniques for connection of a series d.c. circuit containing capacitance and resistor to determine the time constant of the circuit
- capacitors in series and parallel, including:
  - hazards involved in working with capacitance effects and the safety control measures that should be taken
  - safe handling and the correct methods of discharging various size capacitors
  - dangers of a charged capacitor and the consequences of discharging a capacitor through a person
  - effects of capacitors connected in parallel by calculating their equivalent capacitance
  - effects on the total capacitance of capacitors connected in series by calculating their equivalent capacitance
  - techniques for connecting capacitors in series and/or parallel configurations to achieve various capacitance values
  - common faults in capacitors
  - techniques for testing of capacitors to determine serviceability
  - application of capacitors in the electrotechnology industry.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, manufacturer instructions, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0046 Solve problems in single path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to solve problems in single path circuits.

It includes working safely; applying problem-solving procedures, including the use of basic voltage, current and resistance measuring devices; and providing known solutions to predictable circuit problems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work on single path electrical circuits	**1.1** Scope of work to be undertaken is determined from relevant documentation, electrical drawings or relevant person/s
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied

	1.3	Electrical hazards are identified, risks are assessed, and control measures are implemented
	1.4	Advice is sought from the relevant person/s to ensure the work is coordinated effectively with others
	1.5	Materials required for work are identified and accessed in accordance with workplace procedures
	1.6	Tools, equipment and testing devices needed to carry out work are obtained and checked for correct operation and safety
2 Solve problems in single path electrical circuits	**2.1**	The need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and, when necessary, conducted in accordance with workplace procedures
	2.2	Circuits are checked as isolated in accordance with workplace procedures and regulatory requirements
	2.3	Expected circuit parameters are calculated from relevant component ratings/specifications
	2.4	Circuit parameters are measured in accordance with industry standards and checked against expected values
	2.5	Circuit problems are assessed using measured and calculated values as they apply to single path, single source circuits
	2.6	Circuit solutions are determined from measured and calculated values of resistance, voltage, current, and power in single path circuits
	2.7	Solutions are tested in accordance with workplace procedures and industry standards
	2.8	Problems are resolved without damage to equipment, circuits, the surrounding environment or services using sustainable energy practices
	2.9	Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
3 Complete work and document problem solving activities	**3.1**	WHS/OHS work completion risk control measures and procedures are followed

3.2 Worksite is cleaned and made safe in accordance with workplace procedures

3.3 Justification for solutions used to solve circuit problems is documented

3.4 Work completion is documented, and relevant personnel are notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Installation, fault finding, maintenance or development work functions of single source series circuits containing more than one load must be demonstrated in one of the following disciplines:

- computers
- data communications
- electrical
- electronics
- fire protection
- instrumentation
- refrigeration and air conditioning
- renewable and sustainable energy systems
- security technology

Unit Mapping Information

No equivalent unit

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0046 Solve problems in single path circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures, including:
  - identifying and assessing hazards and risks
  - implementing control measures
  - safely measuring the parameters for the whole or any part of a d.c. circuit
- working safety with electric circuits in the electrotechnology sector, including:
  - checking circuits are isolated in accordance with workplace procedures and regulatory requirements
  - applying protections against the physiological effects of electrical currents
- determining the operating parameters of an existing circuit
- calculating values of voltage, current and resistance in single source series circuits given any two of these quantities
- calculating power in single source series circuits from known values of voltage and current and/or resistance
- connecting a series circuit: power supply, protection device, switch and load
- measuring values of voltage and current in single source series circuits
- measuring values of resistance
- altering an existing circuit to comply with specified operating parameters
- developing circuits to comply with a specified function and operating parameters
- identifying loss of supply
- using methodical techniques to solve circuit problems from measure and calculated values
- ensuring compliance with relevant Australian Standards and legislation
- completing work and documenting activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include

knowledge of:

- electrical concepts, including:
  - static and current electricity
  - production of electricity by renewable and non-renewable energy sources
  - transportation of electricity from the source to the load via the transmission and distribution systems
  - utilisation of electricity by the various loads
  - basic calculations involving quantity of electricity
- electrical circuits, including:
  - symbols used to represent an electrical energy source, a load, a switch and a circuit protection device in a circuit diagram
  - purpose of each component in the circuit
  - effects of an open circuit, a closed circuit and a short circuit
  - multiple and sub-multiple units
- Ohm's Law including:
  - direct current (d.c.) single path circuit
  - voltage and currents levels in a basic d.c. single path circuit
  - effects of an:
    - open circuit
    - a closed circuit and a short circuit on a basic d.c. single path
  - relationship between voltage and current from measured values in a simple circuit
  - determining voltage, current and resistance in a circuit given any two of these quantities
  - graphical relationships of voltage, current and resistance
  - relationship between voltage, current and resistance
- electrical power, including:
  - relationship between force, power, work and energy
  - power dissipated in circuit from voltage, current and resistance values
  - power ratings of devices
  - methods for measuring electrical power in a d.c. circuit
  - effects of power rating of various resistors
- effects of electrical current, including:
  - physiological effects of current
  - principles by which an electric current can produce heat, light, motion and a chemical reaction
  - typical uses of the effects of current
  - mechanisms by which metals corrode
  - fundamental principles listed in AS/NZS 3000 for protection against the damaging effects of current
- electromotive force (EMF) sources and conversion of electrical energy, including:
  - input/output (I/O), efficiency and losses of electrical systems and machines

    - principles of generating an EMF, including:
        - when a mechanical force is applied to a crystal
        - when moving a conductor in a magnetic field
        - by the application of light falling on the surface of photovoltaic (PV) cells
        - from the heating of one junction of a thermocouple
    - principles of producing an electrical current from primary, secondary and fuel cells
- resistors, including:
    - types and applications of fixed and variable resistors used in the electrotechnology industry
    - identification of fixed and variable resistors
    - characteristics of temperature, voltage and light dependent resistors and typical applications of each
    - power ratings of a resistor
    - power loss (heat) occurring in a conductor
    - resistor colour code tables
    - specifying a resistor for a particular application
- series circuits, including:
    - circuit diagram of a single source single path circuit
    - identification of the major components of a series circuit: power supply, protection device, switch and loads
    - applications where series circuits are used in the electrotechnology industry
    - characteristics of a series circuit - connection of loads, current path, voltage drops, power dissipation and effects of an open circuit in a series circuit
    - the voltage, current, resistances or power dissipated from measured or given values of any two of these quantities
    - relationship between voltage drops and resistance in a simple voltage divider network
    - techniques for setting up and connecting a single source single path circuit
    - methods for measurement of resistance, voltage and current values in a single source single path circuit
    - effect of an open circuit on a series connected circuit.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, manufacturer instructions, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to use drawings, diagrams, cable schedules, industry standards, codes of practice and specifications as they apply to various electrotechnology work functions.

It includes interpreting schematic, wiring and mechanical diagrams, equipment and cable/connection schedules and manuals; and the use and format of compliance standards, codes and job specifications used in the electrotechnology industry. It also includes the use of site and architectural drawings/plans to show the location of services, apparatus, plant and machinery.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Cross Discipline

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to use drawings, diagrams, schedules and manuals	**1.1** Hazards are identified, risks are assessed and control measures are implemented

	1.2	Need for drawings, diagrams, schedules or manuals is determined from the nature of work to be undertaken
	1.3	Relevant drawings, diagrams, site plans and cable/connection schedules or manuals required for the work to be undertaken are determined and obtained in accordance with workplace procedures
2 Use drawings, diagrams, schedules and manuals to obtain job information	**2.1**	Drawings, diagrams and cable/connection schedules are interpreted using drawing layouts, conventions and symbols
	2.2	Dimensions are extracted from drawings and diagrams in accordance with workplace procedures for application to the work to be undertaken
	2.3	Location of equipment is determined from equipment cable/connection schedules and location diagrams
	2.4	Information relating to work to be undertaken is located and interpreted from relevant cable/connection manuals in accordance with workplace procedures
3 Use drawings, diagrams, schedules and manuals to convey information and ideas	**3.1**	Drawing conventions are applied in neat and legible freehand drawings to convey information and ideas to person/s involved in the work to be undertaken
	3.2	Drawing conventions are used to neatly correct freehand original job drawing to show final 'as-installed' arrangement in accordance with workplace procedures
	3.3	Corrected drawings are forwarded to appropriate person/s in accordance with workplace procedures
4 Comply with industry standards, codes of practice and specifications	**4.1**	Industry standards and codes of practice that specifically apply to relevant disciplines are obtained in accordance with workplace procedures
	4.2	Format of industry standards and codes of practice that apply to relevant disciplines are reviewed and applied in accordance with workplace procedures
	4.3	Purpose, format and content of job specifications are reviewed and applied

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Using drawings, diagrams, schedules, standards, codes and specifications must include:	• assembly, installation, fault finding, maintenance or development work functions in the electrotechnology industry

Unit Mapping Information

This unit replaces and is equivalent to UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
  - identifying hazards
  - implementing and monitoring control measures
- dealing with unplanned events in accordance with workplace procedures
- extracting dimensions from drawings and diagrams
- reading and interpreting drawings, diagrams and plans to determine the location of electrical/communication/audio accessories and appliances
- using drawings, diagrams, cable/connection schedules, industry standards, codes of practice and specifications used in electrotechnology work, including:
  - giving correct information in freehand drawings
  - identifying and selecting drawings, diagrams, site plans, cable/connection schedules and manuals relevant to the work to be undertaken
  - interpreting drawings, diagrams, cable/connection schedules and manuals correctly
  - obtaining compliance standards and codes applicable to particular disciplines
  - reviewing and understanding the format of compliance standards and codes that apply to particular disciplines
  - reviewing the format and content of typical job specifications
  - using correct conventions in freehand drawings
- sketching and marking up basic circuit diagrams
- developing switching charts to identify the terminals of various types of switches
- using drawings, diagrams, schedules and manuals to:
  - connect equipment
  - convey information and ideas
  - obtain job information.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- architectural drawings, including:
  - site plans, floor plans detailed drawings and standard drawings
  - architectural floor plans to determine the power and lighting or communications/audio/video layouts required in a domestic installation
  - site plans to locate the service point, consumer mains, communication services, main switchboard, distribution boards and/or builders supplies
  - standard drawing scales to determine the actual lengths represented by dimensions on an architectural drawing
  - Australian standard symbols used on floor plans to show the location of the accessories and appliances as detailed in an electrical schedule
- building construction drawings and diagrams, including:
  - building types: timber frame, brick veneer, double brick and metal frame
  - identification of different types of footings, floors, external walls, roofs and interior walls
  - typical cable routes through buildings, structures and premises
  - sequence of each constructional stage for brick, brick veneer and timber cottages
  - identification of the stages at which the electrical/communications - first and second fixing occurs in the constructional sequence
  - areas of cooperation between electrical/communications and other building trades
- circuit diagrams, including:
  - purpose of circuit diagrams in the electrotechnology industry
  - conventions used in and the features of circuit diagrams
  - common symbols used in circuit diagram
- electrical drawings, including:
  - types of electrical drawings: block, circuit, wiring and ladder diagrams
  - purpose and application of block, circuit, wiring diagrams and ladder diagrams
  - Australian standard symbols used to represent components on electrical diagrams
  - converting a circuit diagram to a wiring diagram
  - identification of cable type, origin and route from a cable schedule
  - developing a cable schedule for a given installation
- purpose, format and content of typical job specifications, including common templates on which job specifications are written
- regulations for undertaking electrical work, including legislative requirements for ensuring electrical or electronic equipment is safe i.e. compliance requirements of electrical installations
- scope of work covered by licensing in the electrotechnology industry (electrical licensing)
  - legislative requirements for ensuring electrical or electronic equipment is safe, including compliance requirements of electrical installations

- relevant WHS/OHS legislated requirements
- relevant workplace policies and procedures include risk mitigation process
- standards philosophy and format, including:
  - performance verses prescriptive requirements
  - purpose of technical standards and their development
  - role of Standards Australia/New Zealand, International Organisation for Standardisation (ISO) and the International Electrotechnical Commission (IEC)
  - how standards are used in compulsory and accreditation compliance schemes
  - arrangement and use of technical standards in relation to electrical and electronic work
  - how to read and apply a standard
  - standards and codes that apply to all types of electrical installations
  - standards mandated under regulation (e.g. Wiring Rules) or by an authority, deemed-to-comply standard and local service requirements (e.g. service rules)
  - codes applicable to electrical safe working practices and some aspects of the Building Code of Australia (BCA)
- wiring diagrams, including:
  - purpose of wiring diagrams in the electrotechnology industry
  - conventions used in and the features of wiring diagrams
  - common symbols used in wiring diagrams.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECO0001 Estimate electrotechnology projects

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to estimate material and labour costs for competitive quotation/tenders for electrotechnology work exceeding $AUD20,000.

It includes reading and understanding job specifications, adjusting for material take-offs, determining labour and site requirements, costing and documenting.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Commercial

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Determine project scope	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
	1.2 Hazards are identified, risks are assessed and control measures are implemented

	1.3	Extent of the project is determined from design brief specifications, other relevant documentation and discussions with appropriate person/s
	1.4	Estimated completion date is determined from design brief specifications, other relevant documentation and discussions with appropriate person/s
	1.5	Project activities are planned to meet scheduled timeframes in consultation with relevant person/s
2 Estimate electrotechnology project	**2.1**	Material take-offs are determined accurately and checked against job specifications
	2.2	Materials, labour and other costs are determined from relevant workplace documentation
	2.3	Sources and availability of materials and human resources required for the electrotechnology project are determined in accordance with workplace procedures
	2.4	Estimates are checked and revised for accuracy in costing against job specifications in consultation with relevant person/s
	2.5	Unplanned events are responded to in accordance with workplace procedures
3 Document and submit quotation	**3.1**	Project estimates are documented in accordance with workplace procedures
	3.2	Quotation is forwarded to relevant person/s within specified timeframe
	3.3	Quotation documentation is filed in accordance with workplace policies and procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package

Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEC005B Estimate electrotechnology projects.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECO0001 Estimate electrotechnology projects

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- adjusting estimates
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements
- checking and documenting estimates
- creating, documenting, forwarding and filing quotations
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- documenting and submitting quotations
- estimating completion dates
- estimating electrotechnology project material and labour costs
- estimating electrotechnology projects for a competitive quotation/tender for which the value must exceed $AUD20,000
- identifying risk control measures
- planning extent of projects
- sourcing materials and human resources
- working within timeframes.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- contingency
- costing
- design brief and specifications
- documents used in estimating and costing margins
- material take-off methods, including a list of materials with quantities and types of material
- money labour rates method of costing
- life cycle costing analysis

- project estimates, including quotations and adjustments
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- resources to be quantified and costed
- resource (labour, plant, equipment and materials).

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEECS0033 Use engineering applications software on personal computers

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to use computer application software relevant to engineering support work functions.

It includes using computer engineering application software, menus and tools, entering and retrieving information, transferring and printing files and shutting down computer applications.

This unit applies to personnel using computer application software relevant to a workplace. Typically, this will apply to individuals working under supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable

Competency Field

Computer Systems

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to use computer application software	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for an engineering work area are identified, obtained and

		applied
	1.2	WHS/OHS risk control measures and procedures in relation to computer and keyboard use are followed in accordance with workplace procedures
	1.3	Application software and information/instructions required for use are obtained
	1.4	On-screen instructions in relation to any anomaly are followed in accordance with workplace procedures
	1.5	Help menu is used to resolve any common start-up, access issues or anomalies
2 Use engineering software application	**2.1**	WHS/OHS risk control measures and workplace procedures for carrying out work are followed
	2.2	Techniques specific to software packages are used to produce relevant files and engineering information
	2.3	Checks are made to ensure accuracy of information produced
3 Output information from software application	**3.1**	Completed files are stored appropriately in accordance with workplace policies and procedures
	3.2	Files are printed and stored electronically as formal records and/or forwarded to relevant personnel
4 Shut down computer	**4.1**	Files are named, arranged, saved and backed up in accordance with workplace policies and procedures
	4.2	Computer shutdown procedures are followed in accordance with workplace procedures and computer powered off

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package

Companion Volume Implementation Guide.

Unit demonstration must include at least two of the following types of engineering applications:	• office applications • computer-aided design (CAD) • engineering data analysis software • engineering modelling • project management • network simulator • protocol analyser

Unit Mapping Information

This unit replaces and is equivalent to UEENEED104A Use engineering applications software on personal computers.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEECS0033 Use engineering applications software on personal computers

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including risk control measures
- using online 'Help' function to resolve common problems
- following application instructions to input and output information
- outputting information to relevant devices
- preparing to use computer applications
- reading and applying software instructions
- saving, storing information and backing up files
- saving, storing, outputting and forwarding information electronically
- shutting down computer
- transferring information between software applications
- using engineering application software.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- software operating system
- relevant engineering computer software applications, including:
  - computer-aided design (CAD)
  - engineering data analysis software
  - engineering modelling
  - project management
  - network simulator
  - protocol analyser
- relevant job safety assessments or risk mitigation processes, including risk control measures

- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEEEL0019 Solve problems in direct current (d.c.) machines

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to determine correct operation of direct current (d.c.) machines and provide solutions as they apply to electrical installations and equipment.

It includes working safely, the use of testing and measuring devices, and providing solutions derived from measurements and calculations to predictable problems in d.c. machines.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V d.c.

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEEEL0021 Solve problems in magnetic and electromagnetic devices

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work with d.c. machines	**1.1** Device/s and/or circuit/s problems are identified from documentation or work supervisor to determine scope of work
	1.2 WHS/OHS requirements and workplace procedures for a given work area are identified and applied
	1.3 Hazards are identified, risks are assessed and control measures are implemented
	1.4 Tools, equipment and testing devices to carry out work are obtained and checked for correct operation and safety
	1.5 Advice is sought from the work supervisor to ensure work is coordinated effectively with others
2 Solve d.c. machine problems	**2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
	2.2 Need to test or measure live work is determined in accordance with WHS/OHS job safety assessment requirements and work is conducted using safety control measures workplace procedures
	2.3 Relevant circuits, machines and/or plant are checked as being isolated, as required, in accordance with WHS/OHS requirements and workplace procedures
	2.4 Operating parameters of a machine are determined from nameplate details

	2.5 Electrical measurements are completed and readings compared with nameplate ratings
	2.6 Methodical techniques are used to identify and resolve problems from measured and calculated values as they apply to machines
	2.7 Machine is connected and tested to determine correct operation
	2.8 Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
	2.9 Problems are resolved without damage to apparatus, circuits, the surrounding environment or services and using sustainable energy practices
3 Complete work and documentation	**3.1** WHS/OHS work completion risk control measures and workplace procedures are followed
	3.2 Worksite is cleaned and made safe in accordance with workplace procedures
	3.3 Justification for solutions used to resolve problems is documented in accordance with established workplace procedures
	3.4 Work completion is documented and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Solving problems in d.c. machines must include at least two of the following:	• shunt generator • series generator • compound generator

- permanent magnet d.c. motor
- separately excited d.c. motor
- shunt d.c. motor
- series d.c. motor
- compound motor
- printed circuit motor
- brushless motor
- stepped motor

Unit Mapping Information

No equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEEEL0019 Solve problems in direct current (d.c.) machines

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- complying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
  - identifying safety risks associated with using generators, motors. rotating machinery and inductive loads
  - confirming isolation of circuits
- connecting and testing a direct current (d.c.) machine
- identifying of faults in a machine from electrical measurements
- recording electrical measurements and comparing with nameplate ratings
- reversing the direction of rotation of a d.c motor
- ensuring all work complies with relevant industry standards and legislation
- completing required documentation and reporting.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- rotating machine construction, testing and maintenance, including:
  - care, maintenance and testing processes for rotating machines
  - components of a d.c. machine
  - difference between a generator and a motor in terms of energy conversion
  - nameplate of a machine
  - safety risks associated with using rotating machinery
  - types of faults in electric machines
- generators, including:
  - basic operation of a d.c. generator
  - equivalent circuit for a d.c. generator
  - importance of residual magnetism for a self-excited generator
  - load characteristics of a d.c. generator
  - methods of excitation used for d.c. generators
  - open circuit characteristics of d.c. generators
  - prime movers, energy sources and energy flow used to generate electricity
  - reversing the polarity of a d.c. generator
  - types of d.c. generators and their applications
  - calculating generated and terminal voltage of a d.c. shunt generator
  - applying Fleming's left-hand rule for motors and right-hand rule for generators
- motors, including:
  - basic operation of a motor
  - circuit diagrams and characteristics of the different types of d.c. motors
  - effect of back emf in d.c. motors
  - equivalent circuit for the types of d.c. motors
  - operation of a motor and its energy flow
  - safety risks associated with using motors (including risks of series d.c. motors)
  - torque as the product of the force on the conductors and the radius of the armature/rotor
  - calculating force and torque developed by a motor
  - types of d.c. motors and their applications
- machine efficiency, including:
  - efficiency characteristic of a d.c. machine and the conditions for maximum efficiency
  - losses that occur in a d.c. machine
  - methods used to determine the losses in a d.c. machine
  - calculating losses and efficiency of a d.c machine
  - methods used to maintain high efficiency
- safety considerations for inductive loads
- relevant manufacturer specifications

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEEEL0020 Solve problems in low voltage a.c. circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to ascertain correct operation of single and three phase alternating current (a.c.) circuits and solving circuit problems as they apply to servicing, fault finding, installation and compliance work functions.

It includes safe working practices, multi-phase circuit arrangements, issues related to fault protection, power factor and multiple earthed neutral (MEN) systems and solutions to circuit problems derived from calculated and measured parameters.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) a.c. or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEEEL0021 Solve problems in magnetic and electromagnetic devices

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Identify low voltage (LV) a.c. circuit problem	**1.1** WHS/OHS requirements and workplace procedures for work area are identified and applied
	1.2 Hazards are identified, risks are assessed and control measures and workplace procedures are implemented
	1.3 Safety hazards which have not previously been identified are noted on job safety assessments and existing risk control measures are implemented
	1.4 Circuit problems are identified from documentation or work supervisor to determine the scope of work
	1.5 Advice is sought from the work supervisor to ensure work is coordinated effectively with others
	1.6 Sources of materials required for work are identified in accordance with workplace procedures
	1.7 Tools, equipment and testing devices to carry out work are obtained and checked for correct operation and safety
2 Solve LV a.c. circuit problems	**2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
	2.2 Need to test or measure live work is determined in accordance with WHS/OHS requirements and, as required, conducted in accordance with workplace safety procedures
	2.3 Circuits/machines/plant are checked and isolated, as required, in accordance with WHS/OHS requirements

		and workplace procedures
	2.4	Methodical techniques are used to resolve circuit problems from measured and calculated values as they apply to single and three phase LV circuits in accordance with workplace procedures
	2.5	Existing circuits are altered to comply with power factor correction in compliance with industry standards
	2.6	Power factor of a circuit is calculated from given measurements
	2.7	Low power factor is improved by altering the reactive power of a circuit
	2.8	Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
	2.9	Problems are resolved without damage to apparatus, circuits, the surrounding environment or services using sustainable energy practices
3 Complete work and document activities	**3.1**	WHS/OHS work completion risk control measures and workplace procedures are followed
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Justification for solutions used to resolve circuit problems is documented in accordance with workplace procedures
	3.4	Work completion is documented and an appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Solving problems in a.c. circuits must include:	• determining the operating parameters of existing circuits • altering an existing circuit to comply with specified operating parameters • developing circuits to comply with a specified function and operating parameters of voltage, current, impedance, power and power factor • determining the cause of low power factor in an existing circuit • determining conditions causing an existing circuit to be unsafe, including electric shock hazard from indirect contract with conductive parts.
Solving problems in single phase circuits must include:	• connecting single phase circuits • choosing correct instruments • taking measurements correctly and accurately.
Solving problems in three phase circuits must include:	• connecting three phase circuits • choosing correct instruments • taking measurements correctly and accurately.
Solving problems in LV a.c. circuits must include at least four of the following applications:	• series a.c. circuits • parallel a.c. circuits • series/parallel a.c. circuits • single phase motors/controls • three phase motors/controls • synchronous machines • transformers/auxiliary components • star connected circuits • delta connected circuits • star-delta interconnected circuits • open delta circuits.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG102A Solve problems in low voltage a.c. circuits.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEEEL0020 Solve problems in low voltage a.c. circuits

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements Including:
  - implementing OHS/WHS workplace procedures and practices, including risk control measures
  - safely measuring the parameters for the whole or any part of a circuit
- measuring:
  - instantaneous, peak, peak-to-peak values and the period of a sinusoidal waveform
  - the phase angle between two or more alternating quantities from a given sinusoidal waveform diagram
  - the fault-loop impedance of typical circuits
  - the branch currents and voltages in a series and parallel resistance inductance capacitance (RLC) circuit and use a phasor diagram to determine the total current and phase angle between circuit voltage and circuit current
- determining:
  - phase relationship between two or more sinusoidal waveforms from a given diagram
  - the impedance, current and voltages and phase angles for a series and parallel resistance capacitance (RC), resistance inductance (RL), and RLC circuit given the resistance, capacitance, inductance and supply voltage
  - comparison of current limiting characteristics of inductors and resistors
  - the relationship between inductive reactance and capacitive reactance and frequency
  - difference between true power, apparent power and reactive power and the units in which these quantities are measured
  - the root-mean-square (rms) value of line and phase, voltage and current given any one of these quantities

  - the effects of a high impedance in the neutral conductor of a three phase four wire system supplying an unbalanced load where multiple earthed neutral (MEN) earthing is employed
  - the value of neutral current in an unbalanced three phase four wire systems given line currents and power factors
  - how the power factor of a three phase installation can be improved
  - fault loop impedance using resistance and reactance values from relevant industry standards
  - voltage, current and resistance from measured or given values of any two of these qualities
  - the phase sequence of a three phase supply
- drawing and labelling the following:
  - the power triangle to show the relationships between true power, apparent power and reactive power
  - the typical combinations of three phase interconnected systems using star and delta connection
  - the impedance triangle for a series RC, RL and RLC circuit
  - the equivalent circuit of a practical inductor
  - phasor diagrams to show:
    - the relationship between two or more alternating current (a.c.) values of voltage and/or current, including ‘in-phase’, ‘out-of-phase’, ‘phase angle’, lead’ and ‘lag’
    - a series and parallel RC, RL, and RLC circuits
- calculating:
  - rms value of voltage generated in each phase given the maximum value
  - terms in relation to a sinusoidal waveform from values of root-mean-square (rms) value, frequency, peak voltage, period and instantaneous value
  - capacitive reactance and inductive reactance for a given capacitor and inductor
  - total impedance for a series and parallel RLC circuit
- connecting a three-phase star and delta load
- setting up and connecting a single-source resistive a.c. circuit and taking voltage and current measurements to determine the resistance
- applying sustainable energy principles and practices
- completing workplace documentation
- voltage, current and reactance of inductive and capacitive reactance by applying Ohm’s law in purely inductive and capacitive a.c. circuits given any two quantities
- altering an existing circuit to comply with specified operating parameters
- developing circuits to comply with a specified function and operating parameters
- determining conditions causing an existing circuit to be unsafe
- dealing with unplanned events.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- a.c. quantities, including:
  - Pythagoras theorem to a right-angle triangle
  - sine, cosine and tangent ratios of a right-angle triangle
  - sinusoidal voltage generated by a single turn coil rotated in a uniform magnetic field and resulting current
  - terms in relation to a sinusoidal waveform involving:
    - period
    - maximum value
    - peak-to-peak value
    - instantaneous value
    - average value
    - rms value
  - use of a cathode-ray oscilloscope (CRO) to measure d.c. and a.c. voltage levels
- phasor diagrams, including:
  - convention for representing voltage, current and the reference quantity in a phasor diagram
  - purpose of phasor diagrams
- single element a.c. circuits, including:
  - applications of capacitive, inductive and resistive a.c circuits
  - defining inductive and capacitive reactance
  - relationship between voltage drops and current in resistive a.c. circuit
  - arrangement, characteristics of single item inductive and capacitive circuits
- RC and RL series a.c. circuits, including:
  - capacitive and inductive components in power circuits and systems and the effect on the phase relationship between voltage and current
  - impedance and impedance triangle
  - voltage triangle
  - arrangement, characteristics, and relationship between resistance, capacitance and inductance in RL, RC, and LC series circuits
- RLC series and parallel a.c. circuits, including:
  - practical examples of RLC series and parallel circuits
  - voltage and current triangle
  - relationship between resistance, capacitance and inductance in RLC parallel circuits
- power in an a.c. circuit, including:
  - definition of power factor and phase angle
  - methods used to measure single phase power, energy and demand

    - effects of low power factor
- power factor improvement, including:
    - requirements for power factor improvement
    - methods used to improve low power factor of an installation
    - local supply authority and AS/NZS 3000 requirements regarding the power factor of an installation and power factor improvement equipment
    - local supply authority and AS/NZS 3000 requirements for installation of capacitors including safety considerations
    - using manufacturer catalogues to select power factor equipment for a particular installation
- harmonics and resonance effect in a.c. systems, including:
    - conditions in a series and parallel a.c. circuit that produce resonance
    - dangers of series and parallel resonance circuits
    - methods and test equipment used to test for harmonics
    - methods used to reduce harmonics in a.c. power system
    - problems that may arise in a.c. circuits as a result of harmonics and how these are overcome
    - sources in a.c. systems that produce harmonics
    - term harmonic in relation to the sinusoidal waveform of an a.c. power system
- three phase systems, including:
    - features of a multi-phase system
    - comparison of voltages generated by single and multi-phase alternators
    - how three phase is generated in a single alternator
    - advantages of three phase for power systems
    - relationship between the phase voltages generated in a three phase alternator and the conventions for identifying each
    - method of determining the phase sequence or phase rotation of a three-phase supply
- three phase star connections, including:
    - arrangement and characteristics of a three phase star connection
    - effect of a reversed phase winding of a star connected alternator
    - examples of balanced and unbalanced loads in typical power systems
    - terms balanced load and unbalanced load
- three phase four wire systems, including:
    - purpose of the neutral conductor in three phase four wire systems
    - AS/NZS 3000 requirements regarding neutral conductors
    - AS/NZS 3008.1.1 Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation conditions method for determining voltage drop in unbalanced three phase circuits
- three phase delta connections and interconnected systems, including:
    - arrangement and characteristics of a three phase delta connection
    - effect of a reversed phase winding of a delta connected transformer

  - examples of loads in typical power systems
  - limitations and uses of open delta connections
- energy and power requirements of ac systems, including:
  - purposes for measuring power, energy, power factor and maximum demand of a.c. power systems and loads
  - difference between true power, apparent power and reactive power and the units in which these quantities are measured in a three phase system
  - methods used to measure three phase power, energy, power factor and demand
  - using manufacturers catalogues to select measurement equipment for a particular installation
- fault-loop impedance, including:
  - procedures for testing fault-loop impedance
  - term fault-loop impedance of an a.c. power system
- local requirements and relevant industry standards relating to:
  - the installation of capacitors
  - the power factor of an installation and power factor improvement equipment
  - harmonics and resonance effect in a.c. power systems
  - neutral conductors
- phase relationship between line and phase voltages and line and phase currents of star, delta, and typical interconnected systems using star connections and delta connections
- relevant manufacturers' specifications

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications,

regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to determine correct operation of electromagnetic devices and related circuits and provide solutions as they apply to electrical installations and equipment.

It includes working safely; applying power circuit problem-solving processes, including the use of testing and measuring devices; and providing solutions derived from measurements and calculations to predictable problems in electromagnetic devices and related circuits.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to work with electromagnetic devices and circuits	**1.1** WHS/OHS requirements and workplace procedures for a given work area are identified and applied
	1.2 Device/s and/or circuit/s problems are identified from documentation or work supervisor to determine scope of work
	1.3 Hazards are identified, risks are assessed and control measures are implemented
	1.4 Tools, equipment and testing devices to carry out work are obtained and checked for correct operation and safety
	1.5 Circuits are checked and isolated in accordance with workplace procedures and regulatory requirements
	1.6 Advice is sought from the work supervisor to ensure work is coordinated effectively with others
2 Solve electromagnetic device and/or circuit problems	**2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
	2.2 Need to test or measure live work is determined in accordance with WHS/OHS job safety assessment requirements and work is conducted using safety control measures workplace procedures
	2.3 Relevant circuits and devices are checked as being isolated, as required, in accordance with WHS/OHS

	requirements and workplace procedures
	2.4 Operating parameters of an existing circuit with an electromagnetic device are determined
	2.5 Methodical techniques are used to resolve circuit problems from measured and calculated values as they apply to electromagnetic devices/circuits
	2.6 Existing circuit with an electromagnetic device is altered to comply with specified operating parameters
	2.7 Circuit with electromagnetic device is developed to comply with a specified function and operating parameters
	2.8 Electrical equipment is connected and tested to determine correct operation
	2.9 Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
	2.10 Problems are resolved without damage to apparatus, circuits, the surrounding environment or services using sustainable energy practices
3 Complete work and documentation	**3.1** WHS/OHS work completion risk control measures and workplace procedures are followed
	3.2 Worksite is cleaned and made safe in accordance with workplace procedures
	3.3 Justification for solutions used to resolve problems is documented in accordance with established workplace procedures
	3.4 Work completion is documented and appropriate person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Electromagnetic devices must include at least three of the following devices:

- reed switches
- solenoids
- relays
- contactors
- inductive limit switches
- lifting magnets
- core balance devices
- magnetic overloads
- magnetic brakes
- magnetic circuit breakers.

Unit Mapping Information

No equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEEEL0021 Solve problems in magnetic and electromagnetic devices

Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Assessor requirements updated in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
  - identifying hazards and assessing risks and applying control measures
  - confirming isolation of circuits
- using methodological techniques to solve problems in circuits with an electromagnetic device from measured and calculated values
- determining the operating parameters of an existing circuit with an electromagnetic device, including:
  - the direction of magnetic field around a current-carrying conductor and a coil
  - a current-carrying conductor under the influence of a magnetic field
- modifying an existing circuit with an electromagnetic device to comply with specified operating parameters
- connecting electromagnetic devices to comply with a specified function and operating parameters
- completing work and documenting activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- magnetism, including:
  - common magnetic and non-magnetic materials
  - magnetic field patterns of magnets

  - magnets attraction and repulsion when brought in contact with each other
  - practical applications of magnets
  - principle of magnetic screening (shielding) and its applications
- electromagnetism, including:
  - conventions representing direction of current flow in a conductor
  - direction of force between adjacent current-carrying conductors
  - effect of current, length and distance apart on the force between conductors
  - magnetic field around an electromagnet, a single conductor and two adjacent conductors carrying current
  - magnetomotive force (mmf) and its relationship to the number of turns in a coil and the current flowing in the coil
  - practical applications of electromagnets
- magnetic circuit types and associated terminology
- methods used to reduce electrical losses in a magnetic circuit
- electromagnetic induction, including:
  - principle of electromagnetic induction
  - applications of electromagnetic induction
  - Lenz's law
- inductance, including:
  - applications of the different types of inductors
  - industry standard symbols for inductors
  - types of inductor cores
  - construction of an inductor
  - definition of terms: self-induction, inductance and mutual inductance, and time constants
  - effect of physical parameters on the inductance of an inductor
  - relationship between load voltage, current and self-induced electromagnetic force in a direct current (d.c.) circuit having inductance
  - practical applications for the effects of self and mutual induction
  - undesirable effects of self and mutual induction
- magnetic principles in measurement instruments
- magnetic devices, including:
  - operation and application of:
    - magnetic sensing devices
    - contactors and relays
    - solenoids
  - magnetic methods used to extinguish the arc between opening contacts
- relevant manufacturer specifications

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training

Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEEEL0062 Provide engineering solutions to problems in complex polyphase power circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to provide engineering solutions to problems in complex polyphase power circuits at balanced and unbalanced conditions.

It includes working safely, applying problem-solving techniques, using electrical measuring devices, and providing solutions from measurements and calculations and justification for solutions.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0036 Provide engineering solutions for problems in complex multiple path circuits

UEEEL0020 Solve problems in low voltage a.c. circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to develop engineering solutions in complex polyphase	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures for a given work area are identified, obtained and applied

	power circuit problems		
		1.2	WHS/OHS risk control work preparation measures and workplace procedures are followed
		1.3	Scope of complex polyphase power circuit problems is identified from documentation and/or work instructions
		1.4	Advice is sought from the work supervisor to ensure the work is coordinated effectively with others
		1.5	Sources of materials required for work are identified in accordance with workplace procedures
		1.6	Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
2	**Provide engineering solutions to problems**	**2.1**	WHS/OHS risk control work measures and procedures are followed
		2.2	The need to test and measure live electrical work is determined in accordance with WHS/OHS requirements and workplace procedures
		2.3	Circuits are checked and isolated in accordance with WHS/OHS requirements and workplace procedures
		2.4	Complex polyphase power circuit problems are solved from interpreting measurements and calculated values in accordance with workplace procedures
		2.5	Unplanned situations are dealt with safely and with the approval of relevant person/s
		2.6	Problems are solved without damage to apparatus, circuits, the environment and/or services using sustainable energy practices
3	**Complete work and document solutions**	**3.1**	WHS/OHS work completion risk control measures and workplace procedures are followed
		3.2	Worksite is cleaned and made safe in accordance with workplace procedures
		3.3	Justification for solutions used to solve complex polyphase power circuit problems is documented
		3.4	Work completion is documented and relevant person/s notified in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG149A Provide engineering solutions to problems in complex polyphase power circuits.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEEEL0062 Provide engineering solutions to problems in complex polyphase power circuits

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- determining the operating parameters of existing circuit
- using established problem-solving methods
- taking relevant measurements accurately
- interpreting measured values appropriately
- providing effective solutions to circuit problems from measurements and calculations
- giving written justification of solutions provided
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- checking and isolating circuits
- documenting completed work and notifying relevant person/s
- identifying sources of materials required for work
- identifying the scope of the complex polyphase power circuit problems
- preparing for problems in complex polyphase power circuits
- testing and measuring live work
- using tools, equipment and testing equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- polyphase power circuit analysis, including:
  - polyphase supply system encompassing:
    - advantage of three phase system compared to single phase systems
    - double subscript notation
    - phase sequence
    - 120 degree operator
    - given circuit component parameters, solve practically-based problems using:

    - equivalent circuits of transformers, lines and loads
    - component values using rectangular and polar notation
    - current divider and potential divider rules using complex impedances
    - the "per unit" values of voltage, current and impedance to a common VA base
- types of three phase system connections encompassing:
    - supply to balanced star, three and four wire loads
    - supply to delta connected loads
    - effects of phase reversal
    - representation of currents and voltages as complex phasors for three phase, and three phase and neutral quantities
    - calculation of the values of, and drawing labelled phasor diagrams, not to scale, to represent complex values of current and voltage for balanced and unbalanced loads for star and delta systems
    - calculation of values of P, Q and S for balanced and unbalanced systems
    - draw and label single phase diagrams to represent one phase of a complex three phase system
    - represent unbalanced voltages or currents as symmetrical components
    - phase-to-phase currents
    - phase-to-neutral/earth currents
- balanced three phase loads encompassing:
    - calculations of balanced loads connected in star
    - calculations of balanced loads connected in delta
    - calculation of steady state values of fault current for various configurations
    - evaluation of the symmetrical component impedances for the various distribution system components, transformers (earthed neutral case) and generators (high impedance earth)
    - calculation of fault currents using the per unit approach
    - calculation using the "worst case" values based on transformer impedance only (i.e. a short circuit fault)
    - estimation of peak values using accepted multipliers
    - effects of the direct current (d.c.) component on the instantaneous magnitudes of fault currents in transformers and generators
- unbalanced three phase loads encompassing:
    - star – four wire systems
    - delta systems
    - star – three wire systems
    - star - four wire with neutral impedance
- power in three phase circuits encompassing:
    - summation of phase powers and power in balanced loads
    - measurement of power in balanced loads – two Wattmeter methods
- reactive three phase power encompassing:

    - power triangle calculation
    - measurement of VAR
    - power factor correction
  - fault currents encompassing:
    - symmetrical components
    - positive, negative and zero sequence impedance
    - fault current breaking and let-through energy capacities of circuit breakers and fuses
    - importance of fault/arc impedance
    - calculation of fault currents - phase-to-earth faults
    - calculation of fault currents - phase-to-phase faults
    - analysis of asymmetrical fault currents
  - harmonics in three phase systems encompassing:
    - presence of triple in harmonics in three phase systems
    - effects of three phase harmonics for different star and delta connections
    - methods for reducing harmonics in three phase systems
- problem-solving techniques
- relevant checks and isolation of circuits
- relevant manufacturer specifications and operating instructions
- relevant materials, tools, equipment and testing devices
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace instructions, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities and equipment currently used in industry
- resources that reflect current industry practices in relation to providing engineering solutions for solving problems in complex polyphase power circuits

- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEEIC0012 Develop structured programs to control external devices

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to develop structured programs to control an external device.

It includes identifying and developing structured programs for control sub-systems. It also includes testing and documenting structured programs for control sub-systems.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Identify structured program requirements for control sub-system	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures are identified and applied
	1.2 Hazards are identified, risks are assessed and control measures implemented

	1.3	Extent of structured programming is determined from job specifications and consultations with relevant person/s
	1.4	Activities are planned to meet scheduled timelines in consultation with relevant person/s
	1.5	Development kit and software are selected from job specifications and in accordance with workplace procedures
	1.6	Strategies are implemented to ensure programming is written in accordance with workplace procedures
2 Develop structured programs for control sub-system	**2.1**	WHS/OHS risk control measures and procedures for carrying out the work are followed
	2.2	Information technology functions are applied to develop structured programs
	2.3	Correct structure and syntax are applied to developing structured program
	2.4	Programming languages are applied to structured programs to develop and test solutions
	2.5	Issues/problems are analysed to identify and apply solutions
	2.6	Quality of work is monitored in accordance with workplace procedures
3 Test and document structured program for control sub-system	**3.1**	Developed program is tested in accordance with workplace procedures and manufacturer specifications
	3.2	Programming anomalies are identified and corrected in accordance with workplace procedures and manufacturer specifications
	3.3	Work reports are written in accordance with workplace procedures and presented to relevant person/s

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Developing structured programs to control external devices for a given representative range of programs and control devices must include the following attributes:

- safe working practices
- control applications
- knowledge application
- analogue or digital input/output (I/O) signals
- program writing and testing
- documenting programming changes

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI155A Develop structured programs to control external devices.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEEIC0012 Develop structured programs to control external devices

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including implementing risk control measures
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- developing testing procedures
- identifying and correcting anomalies in programs
- identifying and developing structured programs for control sub-systems
- meeting scheduled timeframes
- producing relevant documentation
- testing and documenting structured programs for control sub-systems
- using functions of relevant programming languages
- working with relevant person/s.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- control applications of software
- software terminology
- programming languages currently used by industry
- program development
- programming concepts, including:
  - programming structure
  - documentation
  - compiling source code
  - generating executable files

  - scalar and structured data types
  - constants variables
  - reading from keyboard and writing to screen
  - arithmetic, relational and logical operations
  - making decisions
  - looping operations
  - programming to access external devices via input/output (I/O) boards
  - functions - macros
  - global and local variables, auto and static variables
  - intrinsic functions used in control
  - writing functions
  - linking in external functions to control hardware
  - numerical and character arrays
- control programming fundamentals, including:
  - control applications of software
  - software terminology
  - programming languages currently used by industry
  - program development, including flowcharts, pseudocode and algorithms
  - programming concepts
- job safety assessments or risk mitigation processes, including risk control measures
- problem-solving techniques
- relevant manufacturer specifications
- relevant programming languages, functions and applications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEERE0006 Conduct periodic maintenance of remote area power supply battery banks

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct periodic maintenance of remote area power supply (RAPS) battery banks where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, completing and reporting on maintenance of RAPS battery banks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0023 Work safely with remote area power supply systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to conduct periodic maintenance of RAPS battery banks	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a RAPS plant are identified and applied in accordance with workplace procedures
	1.2 Risk control measures are applied in accordance with workplace procedures prior to commencing work
	1.3 Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
	1.4 Nature and location of RAPS system is identified from relevant documentation or from relevant person/s to determine the scope of work
	1.5 Instructions for coordinating work with relevant personnel and the local community is obtained from relevant person/s and applied
	1.6 Materials required for the work are identified and accessed in accordance with workplace procedures
	1.7 Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
2 Maintain RAPS systems battery banks	**2.1** Workplace risk control measures and procedures are applied
	2.2 Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
	2.3 Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
	2.4 RAPS system battery banks are tested in accordance with relevant workplace procedures

	2.5	Battery bank maintenance, including performance measurements and repairs, is completed safely in accordance with workplace routines and procedures
	2.6	Known types of battery functional faults are identified using fault-finding procedures
	2.7	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
	2.8	Maintenance and repair work is completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.9	Quality checks are conducted in accordance with workplace procedures
3 Complete maintenance work on battery banks and report outcomes	**3.1**	Workplace risk control measures and procedures are applied
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Maintenance issues are referred to the local community in accordance with workplace procedures
	3.4	Battery bank performance measurements are reported to relevant person/s in accordance with maintenance reporting procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK103A Conduct periodic maintenance of remote

area power supply battery banks.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEERE0006 Conduct periodic maintenance of remote area power supply battery banks

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- measuring and recording specific gravity of electrolyte
- measuring and recording cell voltages
- visually inspecting batteries for low electrolyte levels, electrolyte leakage, and corroded terminals and connections
- topping up low electrolyte levels
- identifying electrolyte leaks
- cleaning corroded terminals and connections and treating with an anticorrosive
- reporting all maintenance activities
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking isolation of circuits/machines/systems
- coordinating work with relevant person/s and the local community
- determining live testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- maintaining remote area power supply (RAPS) battery banks, including:
  - conducting quality checks.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- RAPS systems battery bank maintenance techniques, including:
  - basic battery maintenance encompassing:

    - scope of regular testing, checking and corrective actions
    - measurement of specific gravity and voltages of battery cells
    - checking and topping up electrolyte levels
    - checking for acid leakage, cracks in battery casing, corrosion of battery terminals and connections
    - cleaning of terminal connections and treating with an anticorrosive
- battery bank performance measurement
- methods for identification of battery bank faults
- relevant battery manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practice in relation to conducting periodic maintenance of RAPS battery banks
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEERE0007 Conduct periodic maintenance of remote area power supply generator sets

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct periodic maintenance of remote area power supply (RAPS) generator sets where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, completing and reporting on maintenance of RAPS generator sets.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0023 Work safely with remote area power supply systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to conduct periodic maintenance on generator sets	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a RAPS plant are identified and applied
	1.2 Risk control measures are applied in accordance with workplace procedures prior to commencing work
	1.3 Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
	1.4 Nature and location of RAPS system is identified from relevant documentation or from relevant person/s to determine the scope of work
	1.5 Instructions for coordinating work with relevant personnel and the local community is obtained from relevant person/s and applied
	1.6 Materials required for the work are identified and accessed in accordance with workplace procedures
	1.7 Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
2 Maintain RAPS systems generator sets	**2.1** Workplace risk control measures and procedures are applied
	2.2 Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
	2.3 Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
	2.4 RAPS system generator sets are tested in accordance with relevant workplace procedures
	2.5 Generator set maintenance, including performance

		measurements and repairs, is completed safely in accordance with workplace routines and procedures
	2.6	Known types of generator set functional faults are identified using fault-finding procedures
	2.7	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
	2.8	Maintenance and repair work is completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.9	Quality checks are conducted in accordance with workplace procedures
3 Complete maintenance work of generator sets and report outcomes	**3.1**	Workplace risk control measures and procedures are applied
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Maintenance issues are referred to the local community in accordance with workplace procedures
	3.4	Generator set performance measurements are reported to relevant person/s in accordance with maintenance reporting procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Maintaining RAPS generator sets must include at least the following:

- two different systems, including:
  - where the generator set is charged from a generator set and a photovoltaic (PV) array and at least one similar RAPS system where the generator set is charged

from a wind generator

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK104A Conduct periodic maintenance of remote area power supply generator sets.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEERE0007 Conduct periodic maintenance of remote area power supply generator sets

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- coordinating work with relevant personnel and the local community
- determining live electrical work testing/measurement requirements
- checking isolation of circuits/machines/systems
- identifying and accessing materials, tools, equipment and testing devices
- maintaining remote area power supply (RAPS) generator sets measuring and recording generator no-load and load voltages
- measuring and recording generator output for three load conditions
- checking drive engine coolant and oil level
- visually inspecting drive engine for coolant and oil leaks
- checking condition of drive engine oil, oil filter and air filter
- identifying need to change drive engine oil, oil filter and air filter
- changing drive engine oil, oil filter and air filter
- topping up low coolant and oil levels
- identifying the cause of any coolant and oil leaks
- reporting all maintenance activities
- dealing with unplanned events.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include

knowledge of:

- RAPS system generator sets maintenance techniques, including:
  - basic generator set maintenance encompassing:
    - checking of radiator and oil level
    - periodic oil change
    - periodic air, oil and fuel filter change
    - maintaining logbooks for maintenance regime
- generator set performance measurement
- methods for identification of generator set faults
- maintenance reporting requirements
- relevant generator set manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practice in relation to conducting periodic maintenance of RAPS generator sets
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEERE0008 Conduct periodic maintenance of remote area power supply photovoltaic arrays

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct periodic maintenance of remote area power supply (RAPS) photovoltaic (PV) arrays where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, completing and reporting on maintenance of RAPS PV arrays.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0023 Work safely with remote area power supply systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to conduct periodic maintenance on PV arrays	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a RAPS plant are identified and applied in accordance with workplace procedures
	1.2 Risk control measures are applied in accordance with workplace procedures prior to commencing work
	1.3 Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
	1.4 Nature and location of RAPS system is identified from relevant documentation or from relevant person/s to determine the scope of work
	1.5 Instructions for coordinating work with relevant personnel and the local community are obtained from relevant person/s and applied
	1.6 Materials required for the work are identified and accessed in accordance with workplace procedures
	1.7 Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
2 Maintain RAPS systems PV arrays	**2.1** Workplace risk control measures and procedures are applied
	2.2 Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
	2.3 Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
	2.4 RAPS system PV arrays are tested in accordance with relevant workplace procedures
	2.5 PV array maintenance, including performance

		measurements and repairs, is completed safely in accordance with workplace routines and procedures
	2.6	Known types of PV array functional faults are identified using fault-finding procedures
	2.7	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
	2.8	Maintenance and repair work are completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.9	Quality checks are completed in accordance with workplace procedures
3 Complete maintenance work of PV arrays and report outcomes	**3.1**	Workplace risk control measures and procedures are applied
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Maintenance issues are referred to the local community in accordance with workplace procedures
	3.4	PV array performance measurements are reported to relevant person/s in accordance with maintenance reporting procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Maintaining RAPS PV arrays must include at least the following:	• two different systems where the PV array is charged from:
	  • a generator set and a PV array
	  • a wind generator

Exposed voltage is not greater than:	• 50 V a.c., or • 120 V d.c

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK105A Conduct periodic maintenance of remote area power supply photo voltaic arrays.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEERE0008 Conduct periodic maintenance of remote area power supply photovoltaic arrays

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- measuring and recording array no-load and load voltages together with ambient temperature
- measuring and recording array output for three load conditions
- visually inspecting array modules and support structure for physical damage
- visually inspecting array connections and cables
- identifying array defects and faults
- reporting all maintenance activities
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking for damage or de-lamination
- checking isolation of circuits/machines/systems
- cleaning of photovoltaic (PV) modules
- coordinating work with relevant personnel and the local community
- determining live electrical work testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- maintaining remote area power supply (RAPS) PV arrays, including maintaining logbooks and maintenance regime.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- RAPS systems PV array maintenance techniques encompassing:
  - cleaning of PV modules
  - checking for damage or de-lamination
  - checking of module connections, connecting cable and integrity of the array structure
  - maintaining logbooks and maintenance regime
- relevant RAPS system manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practice in relation to conducting periodic maintenance of RAPS PV array
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEERE0009 Conduct periodic maintenance of remote area power supply wind generators

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to conduct periodic maintenance of remote area power supply (RAPS) wind generators where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, completing and reporting on maintenance of RAPS wind generators.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0023 Work safely with remote area power supply systems

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to conduct periodic maintenance on wind generators	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) procedures for a RAPS plant are identified and applied in accordance with workplace procedures
	1.2 Risk control measures are applied in accordance with workplace procedures prior to commencing work
	1.3 Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
	1.4 Nature and location of RAPS system is identified from relevant documentation or from relevant person/s to determine the scope of work
	1.5 Instructions for coordinating work with relevant personnel and the local community is obtained from relevant person/s and applied
	1.6 Materials required for the work are identified and accessed in accordance with workplace procedures
	1.7 Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
2 Maintain RAPS systems wind generators	**2.1** Workplace risk control measures and procedures are applied
	2.2 Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
	2.3 Circuits/machines/plant are isolated in strict accordance with WHS/OHS requirements and workplace procedures
	2.4 RAPS system wind generators are tested in accordance with relevant workplace procedures
	2.5 Wind generator maintenance, including performance

		measurements and repairs, is completed safely in accordance with workplace routines and procedures
	2.6	Known types of wind generator functional faults are identified using fault-finding procedures
	2.7	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
	2.8	Maintenance and repair work are completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.9	Quality checks are conducted in accordance with workplace procedures
3 Complete maintenance work of wind generators and report outcomes	**3.1**	Workplace risk control measures and procedures are applied
	3.2	Worksite is cleaned and made safe in accordance with workplace procedures
	3.3	Maintenance issues are referred to the local community in accordance with workplace procedures
	3.4	Wind generator performance measurements are reported to relevant person/s in accordance with maintenance reporting procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK106A Conduct periodic maintenance of remote area power supply wind generators.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEERE0009 Conduct periodic maintenance of remote area power supply wind generators

Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Typographic error in prerequisite option requirements fixed.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- measuring and recording generator no-load and load voltages
- measuring and recording generator output for three load conditions
- visually inspecting generator and support structure for physical damage
- visually inspecting generator connections and cables
- identifying generator defects and faults
- reporting all maintenance activities
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking isolation of circuits/machines/system
- coordinating work with relevant personnel and the local community
- determining live testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- maintaining remote area power supply (RAPS) wind generators.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- RAPS systems wind generator maintenance techniques, including:
  - wind generator minor maintenance encompassing:
    - checking the integrity of support structure
    - tension of stay wires
    - visual inspection of wind generator operation

    - maintaining logbooks and maintenance regime
- relevant manufacturer specifications
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to conducting periodic maintenance of RAPS wind generators
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEERE0018 Maintain and repair remote area power generation facilities

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain and repair remote area power generation facilities.

It includes preparing for, conducting and reporting on maintenance and repair of remote area power generation facilities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEERE0019 Maintain safety and tidiness of remote area power supply systems

UEERE0023 Work safely with remote area power supply systems

UEERE0007 Conduct periodic maintenance of remote area power supply generator sets

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain and repair remote area power generation facilities	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements for a remote area power generation facility are identified and applied in accordance with workplace routines and procedures
	1.2 Risks are identified, assessed and control measures applied in accordance with workplace procedures prior to commencing work
	1.3 Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
	1.4 Nature and location of remote area power station facility is obtained from documentation or from relevant person/s to determine the scope of work
	1.5 Advice on coordinating work with others and the local community is obtained from relevant person/s and applied
	1.6 Sources of materials required for work are identified and accessed in accordance with workplace routines and procedures
	1.7 Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
2 Maintain and repair remote area power generation facilities	**2.1** Workplace risk control measures and procedures are applied
	2.2 Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
	2.2 Inspection repairs, replacements and/or adjustments are completed on items listed in the maintenance schedule and in accordance with workplace procedures
	2.3 Fuel, coolant, oil and other fluid spills are cleaned and area made safe in accordance with workplace procedures

	2.4	Batteries are serviced and/or replaced as specified in the maintenance schedule and in accordance with workplace procedures
	2.5	Consumables are removed and disposed of in accordance with environmentally safe procedures
	2.6	Non-routine events are referred to relevant person/s for directions in accordance with workplace procedures
	2.7	Quality checks are conducted in accordance with instructions and workplace procedures
3 Report maintenance and repair of remote area power generation facilities	**3.1**	Workplace risk control measures and procedures are applied
	3.2	Maintenance issues beyond the scope of work are referred to relevant person/s in accordance with workplace procedures
	3.3	Work completed is reported to relevant person/s in accordance with maintenance reporting and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK116A Maintain and repair remote area power generation facilities.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEERE0018 Maintain and repair remote area power generation facilities

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- understanding the location and nature of the work required
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- determining scope of work from documentation and/or relevant person/s
- identifying and accessing materials, tools, equipment and testing devices
- coordinating work with relevant person/s
- checking isolation of circuits/machines/systems
- correctly inspecting, repairing, replacing and adjusting items listed in the maintenance schedule
- maintaining and repairing remote area power generation facilities
- servicing batteries and battery packs in a community power station
- cleaning fluid spills appropriately
- removing and disposing of consumable following environmentally safe procedures
- conducting quality checks
- dealing with unplanned events
- applying environmentally safe work practices
- completing relevant documentation/reporting.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- remote area essential services power plant, including:
  - minor service and maintenance procedures of diesel-powered generation equipment in accordance with a prepared schedule encompassing:
    - types and grades of inspections, repairs, replacement and/or adjustments under a maintenance schedule:
      - replacement items/materials, including engine oil, oil filters, fuel filters, engine

coolant system filters, air cleaners and fan belts
    - inspection and repair items, including leakages from fuel system, coolant system and lubricating oil system
  - cleaning of fluid spills
  - environmentally safe procedures for removal and disposal of consumables
- servicing batteries and battery packs in a community power station in accordance with the prepared maintenance schedule encompassing:
  - hazards associated with batteries
  - types of batteries and their application in a community power station (starting battery set and switchboard (nicad) batteries)
  - battery maintenance techniques
- schedule regular servicing and maintenance encompassing:
  - engine oil and filter changes
  - fuel filters
  - coolant filters
  - water trap devices
  - drive belt (condition/adjustment)
  - valve adjustments (if applicable)
  - major and minor mechanical servicing by outside agents
  - air cleaner (both dry paper and oil bath types)
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations

- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to maintaining and repairing facilities associated with remote area essential service operations
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEERE0019 Maintain safety and tidiness of remote area power supply systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain the safety and tidiness of remote area power supply (RAPS) systems.

It includes preparing to maintain safety and tidiness of RAPS system equipment, completing work and reporting issues.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEERE0023 Work safely with remote area power supply systems

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to maintain safety and tidiness of RAPS system	**1.1** Work health and safety (WHS)/ occupational health and safety (OHS) requirements and workplace procedures for relevant work area are identified and applied
	1.2 Risk control measures are applied in accordance with

		workplace procedures prior to commencing work
	1.3	Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
	1.4	Nature and location of the RAPS system is identified from work schedule and relevant person/s to determine the scope of work
	1.5	Advice on coordinating work with relevant personnel and the local community is obtained from relevant person/s and applied
	1.6	Tools and equipment required for cleaning work are obtained and checked for correct operation and safety
2 Maintain RAPS system	**2.1**	Workplace risk control measures and procedures are applied
	2.2	Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
	2.3	Circuits/machines/system are isolated in accordance with WHS/OHS requirements and workplace procedures
	2.4	RAPS system and area are cleaned in accordance with workplace procedures
	2.5	Cleaning is completed minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.6	Quality checks are conducted in accordance with workplace procedures
3 Complete work and report outcomes	**3.1**	Workplace risk control measures and procedures are applied
	3.2	Cleaning and tidiness issues are reported to the local community in accordance with workplace procedures
	3.3	Cleaning work is completed and issues are reported to relevant person/s in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

RAPS system must incorporate a battery bank and at least two of the following:

- generator set
- photovoltaic (PV) array
- RAPS system
- wind generator

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK101A Maintain safety and tidiness of remote area power supply systems.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEERE0019 Maintain safety and tidiness of remote area power supply systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- removing non-remote area power supply (RAPS) equipment
- safely removing insects, spiders and any animals
- safely removing dust and dirt from floors and equipment
- identifying and reporting at least two safety issues
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including:
  - applying relevant risk identification, assessment, reporting and control requirements
  - checking isolation of circuits/machines/system
- completing reporting requirements to relevant person/s and local community
- conducting quality checks
- coordinating work with relevant person/s and the local community
- determining live testing/measurement requirements
- maintaining safety and tidiness of RAPS system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- RAPS plant area cleaning, and maintaining RAPS systems, including:
  - need for a clean and tidy plant area
  - RAPS system components and associated equipment and their location within the plant area
  - manual fuel pump, if available
  - plant cleaning techniques:
    - fuel and oil

  - acid spills
  - removal of dust, insects, spiders and animals
  - removal of non-RAPS equipment
- techniques for reporting and dealing with cleaning issues
- relevant safe work method statements (SWMS) or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation, policies and procedures, including reporting requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to maintaining safety and tidiness of a RAPS system
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEERE0023 Work safely with remote area power supply systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to work safely on remote area power supply (RAPS) systems.

It includes preparing to enter a RAPS system, applying safe working practices, and following workplace procedures for hazard identification and risk control in RAPS system areas.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare to enter a RAPS system	**1.1** Hazards/risk control procedures for RAPS systems maintenance are identified and applied
	1.2 System access permit is obtained from relevant person/s
	1.3 Preparation for electrical and non-electrical isolation is completed in accordance with workplace procedures

	1.4	Tools and equipment required for work are checked for safety and correct functionality in accordance with workplace procedures
2 Apply safe working practices in RAPS system area	**2.1**	Workplace risk control measures and procedures are applied
	2.2	Safe work practices for RAPS system are applied in accordance with workplace procedures
	2.3	Circuits/machines/system are isolated in accordance with work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures
	2.4	Safe work practices in RAPS system are applied in accordance with workplace procedures
	2.5	Safe working practices are applied minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.6	Quality checks are conducted in accordance with workplace procedures
3 Follow workplace procedures for hazard identification and risk control in RAPS system areas	**3.1**	Risks/hazards are identified, assessed and control measures implemented and monitored through consultation with relevant person/s and the local community
	3.2	Workplace hazards are identified and reported to relevant person/s in accordance with workplace procedures
	3.3	WHS/OHS incident reports are completed in accordance with regulatory requirements and workplace procedures
	3.4	Instructions and training are applied in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Working safely with RAPS system must include at least the following:	• two different systems incorporating the following:
	  • battery bank
	  • generator set
	  • photovoltaic (PV) array
	  • one RAPS system with the addition of a wind generator

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK102A Work safely with remote area power supply systems.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEERE0023 Work safely with remote area power supply systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- preparing to enter the remote area power supply (RAPS) system including, permission to enter the area and to isolate RAPS equipment
- applying work procedures and instructions as they apply to risk control measures
- dealing with accidents and emergencies
- participating in consultation processes, identifying hazards and implementing and monitoring control measures
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices in RAPS system, including:
  - completing WHS/OHS incident reports
- conducting RAPS system quality checks
- obtaining and inspecting tools and equipment and reporting faults
- preparing for and checking isolation of circuits/machines/systems.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- RAPS safe working practices, including:
  - general safety encompassing:
    - general safety
    - risk assessment
    - personal protective equipment (PPE)
    - WHS/OHS procedures
  - RAPS safety and risk assessment encompassing:
    - types of hazards in and around RAPS:

        - rotating machines
        - fuels and oils
        - exhaust fumes
        - acids and flammable gases from batteries
    - measures for dealing with hazards in and around RAPS
    - purpose and methods for isolation and de-energisation of power supplies
- correct isolation and de-energisation procedures encompassing:
    - processes for preventing generator from automatically starting
    - isolating photovoltaic (PV) arrays
    - isolating wind driven generators
    - isolating battery
    - isolating inverter power sources
- safety signage encompassing:
    - types of signs
    - location
    - condition
    - suitability
- access to system encompassing:
    - methods for limiting access to plant areas
- reporting
- access to RAPS, including:
    - obtaining access permit/s
- relevant manufacturer specifications
- relevant workplace documentation, policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry

- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEERE0041 Maintain operation of remote area power generation plant

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to maintain operation of remote area power generation plant where the exposed voltage is not greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

It includes preparing for, conducting, completing and reporting on maintenance of power generation plant.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEERE0018 Maintain and repair remote area power generation facilities

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Prepare for maintenance	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements for a remote area power generation plant are identified and applied in accordance with workplace procedures

	1.2	Risks are identified, assessed and control measures applied in accordance with workplace procedures prior to commencing work
	1.3	Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
	1.4	Nature and location of the power plant are obtained from documentation or from work supervisor to determine the scope of work to be undertaken
	1.5	Advice on coordinating work with others and the local community is obtained from relevant person/s and applied
	1.6	Sources of materials required for work are identified and accessed in accordance with workplace routines and procedures
	1.7	Tools, equipment and testing devices required for work are obtained and checked for correct operation and safety
2 Conduct maintenance work	**2.1**	Workplace risk control measures and procedures are applied
	2.2	Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
	2.3	Relevant maintenance procedures are applied to test and check remote area power plant
	2.4	Known types of remote area power plant functional faults are identified and repaired in accordance with workplace procedures
	2.5	Maintenance performance measurements and repairs are conducted safely in accordance with workplace routines and procedures
	2.6	Workplace procedures are applied for referring non-routine events to relevant person/s for directions
	2.7	Maintenance and repair work is conducted minimising waste of materials, energy, damage to apparatus, circuits, the surrounding environment and services
	2.8	Quality checks are conducted in accordance with instructions and workplace procedures

3 Complete maintenance work and reporting	**3.1** Workplace risk control measures and procedures are applied
	3.2 Worksite is cleaned and made safe in accordance with workplace procedures
	3.3 Maintenance issues beyond the scope of work are referred to relevant person/s in accordance with workplace procedures
	3.4 Work completed is reported to relevant person/s in accordance with maintenance reporting and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK120A Maintain operation of remote area power generation plant.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

Assessment Requirements for UEERE0041 Maintain operation of remote area power generation plant

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- understanding the location and nature of the work required
- following prescribed procedures to testing and checking plant
- identifying and repairing known functional faults
- carrying out maintenance and repairs effectively
- identifying maintenance issues beyond the scope of prescribed work and notifying appropriate person/s
- documenting work activities accurately
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- checking isolation of circuits/machines/systems
- conducting quality checks
- identifying and accessing materials, tools, equipment and testing devices
- maintaining operation of remote area power generation plant.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- minor servicing of a remote area power generating plant encompassing:
    - engine oil and filters
    - fuel filters
    - coolant filters
    - water trap devices
    - air cleaners
- minor maintenance of a remote area power generating plant encompassing:
    - fan and accessory drive belts

    - repair of minor leaks: coolant, oil and fuel
- servicing of a remote area power generating plant battery systems encompassing:
    - starting battery set
    - switchboard (nicad) batteries
- information displayed by the instruments/meters in a remote area power generating plant encompassing:
    - generating equipment (diesel engine)
    - engine lubrication
    - system oil pressure
    - engine cooling system coolant
    - temperature (in and out)
    - fuel pressure
    - current
    - voltage
    - power (kW)
    - kilowatt hours
    - frequency, hertz (Hz)
    - engine running hours
    - station services: fuel tank dip and lubricating oil tank level
    - fuel flow meter
- use of the information gathered from instruments/meters encompassing:
    - ordering of fuel, lubricating oil and coolant
    - scheduling regular servicing and maintenance for engine oil and filter changes, fuel filters, drive belt (condition/adjustment), valve adjustments (if applicable), major and minor mechanical servicing by outside agents and air cleaner (both dry paper and oil bath types)
- power plant log sheets and readings encompassing:
    - completed log sheets
    - forwarding information to appropriate person/location at regular intervals (weekly)
- general cleanliness of the power generating plant and buildings encompassing:
    - generation plant
    - oil leaks
    - water leaks
    - fuel leaks
    - safety awareness
    - plant buildings
    - internal floor area
    - used consumables
    - spare parts storage
    - spider webs and other pests

    - rubbish containers
    - ventilation
    - power station compound
    - fence and gate (if applicable)
    - weeds
    - grass (if applicable)
    - rubbish containers
    - fuel and oil supply (drums)
    - water reticulation (if applicable)
    - tools and equipment
    - location/storage
    - cleanliness
    - maintenance
    - drain/drip tins
    - safety signage
    - location
    - condition
    - suitability
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE)

currently used in industry
- resources that reflect current industry practices in relation to maintaining operation of remote area power generation plant
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6

UEPOPS030 Coordinate power generation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to coordinate the operation and control of multiple power generators sharing load under the control of one operator.

Operators are responsible for starting and stopping power generators. Depending on need, this includes synchronising and adjusting voltage output, troubleshooting, fixing problems and responding to emergencies.

Competency in this unit requires the ability to plan for power generating plant operations, operate power generator and excitation system, control generation of electrical energy, coordinate generation control, monitor system and power generating plant and the completion of all documentation. Individuals will, in general, work as an operator with responsibility for coordinating power generation, in a power generation facility.

Power generation plant operators are trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

There are no prerequisite units.

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS **PERFORMANCE CRITERIA**

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1 Plan for plant operation	**1.1** Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.2 Work and resource requirements are identified from relevant personnel and documentation in accordance with workplace procedures
	1.3 Preoperational checks of power generation plant operations are carried out in accordance with workplace procedures
2 Operate generator and excitation system	**2.1** Generator and excitation system are operated in accordance with manufacturers' recommendations and specifications, and workplace procedures
	2.2 Synchronising requirements are assessed and evaluated to ensure generator and excitation system stability in accordance with workplace procedures
	2.3 Generator and excitation system are monitored and observed to detect deviations from normal operating conditions in accordance with workplace procedures
	2.4 Corrective actions are taken to rectify generator and excitation system abnormalities in accordance with manufacturers' recommendations and specifications, and workplace procedures
3 Control generation of electrical energy	**3.1** Power generator output is adjusted to meet electricity demand in accordance with operating requirements and workplace procedures

	3.2	Reactive power generation and voltage regulation requirements are assessed, and excitation system is controlled to achieve output in accordance with workplace procedures
	3.3	Generator stabilities and operating limits are assessed, and excitation system is controlled to maintain limits in accordance with manufacturers' recommendations and specifications, and workplace procedures
	3.4	Generator cooling systems and limits are monitored and assessed, and excitation system is controlled to maintain limits in accordance with manufacturers' recommendations and specifications, and workplace procedures
4 Coordinate generation control	**4.1**	Load sharing between multiple generators is controlled to maintain efficiency and power generating plant reliability in accordance with workplace procedures
	4.2	Output of generators is adjusted to meet electricity demand in accordance with manufacturers' recommendations and specifications, and workplace procedures
	4.3	Generator, excitation system and power generating plant key indicators are monitored and adjusted to maintain limits and detect deviations from normal operating conditions in accordance with manufacturers' recommendations and specifications, and workplace procedures
	4.4	Generator and excitation system integrity and continuity of supply are maintained in accordance with manufacturers' recommendations and specifications, and workplace procedures
	4.5	Consultation with relevant personnel is undertaken in accordance with workplace procedures

	4.6	Generator and excitation system are operated efficiently in accordance with manufacturers' recommendations and specifications, and workplace procedures
5 Monitor system and plant	**5.1**	Generator and excitation system or power generating plant to be monitored are physically identified in accordance with workplace procedures
	5.2	Generator and excitation system or power generating plant are monitored for normal operation and to detect deviations in accordance with workplace procedures
	5.3	Relevant personnel are notified when defects and abnormal operating conditions are detected in accordance with workplace procedures
6 Analyse system and plant faults	**6.1**	Causes of abnormal generator and excitation system operating conditions are identified by analysing technical and operational information in accordance with workplace procedures
	6.2	Generator and excitation system or power generating plant integrity are maintained in consultation with relevant personnel and reference to technical and operational documentation in accordance with workplace procedures
	6.3	Relevant personnel, including specialists, are arranged for investigation of identified operational abnormalities in accordance with workplace procedures
7 Complete documentation	**7.1**	Power generation plant problems, movements and status are reported in accordance with workplace procedures
	7.2	Documentation is updated in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS515 Coordinate power generation.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8

Assessment Requirements for UEPOPS030 Coordinate power generation

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- analysing generator and excitation system and power generation plant faults using data analysis techniques and tools
- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
  - emergency procedures
  - risk control measures
  - safe working practices
- communicating with personnel
- completing documentation using recording procedures
- controlling and coordinating power generation of electrical energy
- coordinating power generation control
- coordinating operation of equipment to maintain power generation plant integrity and continuity of supply, including:
  - clarifying power generation plant status
  - determining relevant corrective actions
  - maintaining power generator unit integrity
  - recognising abnormal plant operating conditions
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- interpreting manuals
- interpreting remote indication of power generation plant status and condition
- monitoring generator and excitation system and power generation plant
- operating generator and excitation system
- planning for one operator isolated power generation plant operations.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the

requirements of the elements and performance criteria and include knowledge of:

- analysis of system faults arrangements of power production plant
- coordination of power generation, including one operator isolated power generation plant operations
- generator excitation and cooling systems, types and characteristics
- identification of power generation plant status
- manuals
- operation of generator and excitation system
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- power generation plant and equipment, location and operating parameters
- power generation plant process control systems, system components and interactions
- WHS/OHS requirements, including:
  - emergency procedures
  - risk control measures
  - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8

UEPOPS038 Evaluate cost estimations and initiate appropriate solutions

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

This unit involves the skills and knowledge required to evaluate estimated costs for planned and forced power generation plant outages (either a single item or whole unit) and to initiate appropriate solutions.

An outage is when power generation plant and equipment is not available to perform intended function. Forced outage is the shutdown of power generation plant, equipment or a power generation facility when a generating unit is unavailable to produce power due to an unexpected breakdown.

Competency in this unit requires the ability to evaluate work details, identify costs, develop solutions and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator with responsibility for maintenance budgets.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEECO0001 Estimate electrotechnology projects

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential	Performance criteria describe the performance needed to

outcomes.	demonstrate achievement of the element.
1 Evaluate work details	**1.1** Power generation plant outage work plan and methods are evaluated in accordance with workplace procedures
	1.2 Work health and safety (WHS)/occupational health and safety (OHS) regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, environmental requirements and workplace procedures are identified, applied and monitored
	1.3 Timeframes for power generation plant outage work are identified in accordance with workplace procedures
	1.4 Details of materials, equipment, specialist services and contractual provisions are identified in accordance with workplace procedures
	1.5 Specific disposal requirements are evaluated in accordance with workplace procedures
2 Identify costs	**2.1** Costs associated with the planned and forced outages are evaluated in accordance with workplace procedures
	2.2 Previous planned and forced outages are analysed to determine problems in accordance with workplace procedures
3 Develop solutions	**3.1** Potential solutions to limit timeframe and budget over runs are identified in accordance with workplace procedures
	3.2 Potential variations in planned and forced outages scope of work are identified and solutions are developed in accordance with workplace procedures
4 Complete documentation	**4.1** Evaluation report is produced in accordance with workplace procedures
	4.2 Possible increases in budget are documented in accordance with workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS520 Evaluate cost estimations and initiate appropriate solutions.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8

Assessment Requirements for UEPOPS038 Evaluate cost estimations and initiate appropriate solutions

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
  - emergency procedures
  - risk control measures
  - safe working practices
- communicating with key stakeholders
- completing documentation
- developing planned and forced outage cost solutions
- evaluating planned and forced outage details
- identifying planned and forced outage costs using data analysis
- implementing regulations, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- producing quotations and cost options
- recognising cause and consequences of potential costs using data analysis techniques and tools
- utilising costing and quoting techniques.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- arrangements of power production plant
- costing and quotation techniques
- data analysis
- planned and forced outages
- potential solutions for outage costs
- power generation plant and equipment, location and operating parameters
- regulations, legislative requirements, codes of practice, manufacturers' recommendations and

specifications, and environmental requirements
- WHS/OHS requirements, including:
  - emergency procedures
  - risk control measures
  - safe working practices
- workplace documentation
- workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8

UET Transmission, Distribution and Rail Sector

Modification History

Not applicable.

Credit Arrangements

Currently there are no credit transfer arrangements between qualifications in this Training Package and higher education qualifications.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7