Technical Fact Sheet: Biodiversity Assessments

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EDO NSW Scientific Advisory Service

EDO NSW provides expert scientific and technical advice on public interest environmental matters through EDO NSW's Scientific Advisory Service.[2] The service comprises:

- an in-house Scientific Director,
- a Technical Advisory Panel, providing strategic advice on EDO NSW scientific matters, and
- an Expert Register, comprising experts in a range of scientific and technical fields who are willing to provide advice to EDO NSW on a pro-bono basis.

Overview

The purpose of this Fact Sheet is to assist members of the public to evaluate biodiversity assessments that have been prepared for the purpose of meeting environmental legislative requirements. This document should be read in conjunction with EDO NSW's more detailed Fact Sheets on biodiversity legislation, available on our website.

[1] http://www.edonsw.org.au/legal_advice
[2] See: http://www.edonsw.org.au/science

Biodiversity assessment

Although there are several definitions for biodiversity, it is often defined simply as the 'variety of life on earth'.[3] The Millennium Ecosystem Assessment defines biodiversity as variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems. This includes diversity within species, between species, and of ecosystems.[4]

As Australia is very isolated, it is inhabited by many endemic species, and has environments unique to the continent. Even within NSW there is a wide variety of biogeographical regions including coasts, forests and deserts. Each region contains species not found anywhere else in the country or even the world. The Australian Alps alone, for instance, is home to 21 known endemic species of plants.[5]

Biodiversity management requires an understanding of the species found in a particular area. This will usually require a biodiversity assessment.

Biodiversity assessments may be part of a broader Environmental Impact Assessment (EIA) and are often required under specific legislation, especially where a proposed development may impact on a species, a population, or an ecological community.

The type of biodiversity assessment needed is governed by several pieces of legislation.

For more information on the legislative tools that require biodiversity assessments, see our LEPs and SEPPs, EPBC Act and Threatened Species and Ecological Communities Fact Sheets.

Types of biodiversity assessments

Generally biodiversity assessments must be prepared by either a project applicant or by a qualified consultant working on their behalf. Assessments need to conform to the requirements of the legislation under which the project will be assessed. Three of the most common types of assessments are described below.

Review of Environmental Factors or Statement of Environmental Effects

REFs and SEEs take a preliminary look at the potential environmental impacts of a proposed project, and any measures that will be taken to minimise those impacts.

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[3] OEH (2011) *Conserving Biodiversity in NSW*. Available from: http://www.environment.nsw.gov.au/biodiversity/index.htm.
[4] Millennium Ecosystem Assessment (2005) Ecosystems and Human Well-Being: Biodiversity Synthesis. Available from: http://www.maweb.org/documents/document.354.aspx.pdf.
[5] OEH (2011) *Australian Alps - Biodiversity*. Available from: http://www.environment.nsw.gov.au/bioregions/AustralianAlps-Biodiversity.htm.

If the REF or SEE reveals that there is likely to be a significant environmental impact, the proponent will need to undertake an Environmental Impact Statement (see below).

In cases where there is likely to be a significant impact on threatened species, populations or ecological communities, or their habitat, a Species Impact Statement may also be required.

Environmental Impact Statement

An Environmental Impact Statement (EIS) is a report which documents the environmental effects of a proposed development. An EIS must include:[6]

- a summary of the EIS;
- a statement of the objectives of the proposed development;
- analysis of alternatives to the proposed development, including the consequences of not carrying out the development;
- a description of the development;
- a description of the environment likely to be affected by the development;
- the likely impacts of the development on the environment;
- the proposed measures to reduce or avoid the likely impacts;
- a list of any additional approvals that may be needed such as a pollution licence;
- reasons justifying the carrying out of the development in the manner proposed.

Species Impact Statement

Although SISs may be presented by themselves, they may also be incorporated into EISs. They must include:[7]

- a full description of the action proposed, including its nature, extent, location, timing and layout,
- a general description and an assessment of the threatened species, populations or ecological communities known or likely to be found in the area affected by the activity, including details of its local, regional and State-wide conservation status, the key threatening processes generally affecting it, its

[6] *EP&A Act Regulation 2000*, Sch 2, cl. 7.
[7] *Threatened Species Conservation Act 1995* (NSW), s. 110.

habitat requirements and any recovery plan or threat abatement plan applying to it, and estimates of its abundance,

- a full description of the type, location, size and condition of the habitat (including critical habitat) of those species, populations and ecological communities, and details of the distribution and condition of similar habitats in the area likely to be affected,
- a description of any feasible alternatives to the action that are likely to have a lower impact, and reasons justifying the carrying out of the action in the manner proposed, in regards to the biophysical, economic and social considerations and the principles of ecologically sustainable development,
- a list of any approvals that must be obtained under any other Act or law before the action may be lawfully carried out, including details of the conditions of any existing approvals that are relevant to the species, population or ecological community, and
- details of the qualifications and experience in threatened species conservation of the individuals involved in preparing the statement.

Components of biodiversity assessments

The following steps provide a basic guide to the information needed when assessing a proposed development. Whilst there are different types of biodiversity assessments, and details may vary according to individual proposals, a good assessment will generally include the following components.[8]

1. ***Clear description of the overall project***

- Is there a clear description of the proposal? It is obviously difficult for the decision-maker to consider the potential environmental impacts of a proposal if he or she cannot determine what the proposal actually is.
- Have all the key elements of the proposal been assessed? The design of a proposal is sometimes modified during preparation of the EIA report, sometimes after field work has been undertaken and assessments have largely been made. These modifications are sometimes not adequately assessed, or even assessed at all, in the final EIA report.
- Have the key environmental issues been clearly identified, and has proper weight been given in the assessment to these issues? Various government

[8] Note that the *Native Vegetation Act* requires that any assessment under the Act is undertaken in accordance with the Environmental Outcomes Assessment Methodology Gazetted on 4 March 2011. DECW (2011) 'Environmental Outcomes Assessment Methododology' in *New South Wales Government Gazette* 24, pp 1756-1871. Available from: http://www.nsw.gov.au/sites/default/files/Government_Gazette_4_March.pdf.

departments produce environmental assessment guidelines to help proponents prepare assessment reports.[9]

- Have the impacts of the proposal during both construction and operation been assessed?
- Have alternatives to the proposal, such as alternative locations, alternative construction methods, or alternative designs, been assessed?
- Have the cumulative impacts of the proposal been assessed? This involves identifying other existing or proposed developments in the area with similar environmental impacts and assessing the cumulative impacts of these with the current proposal.
- Have any off-site impacts of the proposal been assessed?

2. Clear description of the project components impacting on biodiversity

A biodiversity assessment should give a comprehensive description of the project to ensure that the decision-maker and the community have a clear understanding of the potential impacts of the project. The description should include:

- Identification of the location of the project at a local scale (in relation to surrounding land uses) and at a regional scale (e.g. biogeographical regions, catchments, etc.),
- A general description of the type and nature of the project (e.g. residential, industry, infrastructure, etc.),
- Identification of the key elements of the project which may significantly affect the environment (e.g. light, noise, emissions, etc.),
- Identification of the duration and timing of the construction phase and the operational phase of the project,
- Development of a plan to manage closure and post-closure impacts if a fixed term project, and
- Identification of the extent of the development's impact (including on site, adjacent to, downstream, etc.).

Some examples of impacts commonly associated with projects include:

- Destruction of vegetation communities,
- Loss, fragmentation and degradation of habitat,

[9] See: http://www.resources.nsw.gov.au/environment/pgf;

- Disturbance or increased mortality of fauna due to noise, lights or increased predation by domestic or feral animals or road kills, and
- Changes to aquatic ecosystems resulting from changes to water quality or flows.

3. Clear identification of the study area and local populations

A key question in any assessment, and the most difficult to answer, is whether the development will increase the risk of extinction of a viable local population or a local occurrence of a species or an ecological community. In determining this question, it is vital for a biodiversity assessment to clearly define the study area.

Most guidelines define the study area as the area directly and indirectly affected by the project.[10] The study area will therefore normally be larger than the project site, and may include:

- Areas adjoining the project site,
- Areas downstream of the project site, which may be affected by impacts such as run-off, and
- Any other areas potentially impacted, such as areas affected by groundwater changes or by increased domestic animal predation due to the project.

Guidelines generally define a 'viable local population' or 'local occurrence' as the species or community occurrence on the project site plus any adjoining areas where the exchange of genetic material between individuals can be demonstrated.[11] This definition reflects the focus of the assessment of significance on the local scale rather than the regional scale, and should prevent the study area from being made inappropriately large.

The larger the study area, the less likely the impact will be regarded as significant. For example, clearing 1 ha of bushland in a study area containing 100 ha of bushland (1%) is less likely to be regarded as significant when compared to clearing 1 ha in a study area containing 2 ha (50%).

Biodiversity assessments which fail to clearly and correctly define the viable local population lead to difficulties in concluding the effects that a development will have on individuals at a project site, and how significant the impact is on a threatened species or ecological community.

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[10] See: Significant Impact Guidelines for Matters of National Environmental Significance http://www.environment.gov.au/resource/significant-impact-guidelines-11-matters-national-environmental-significance

[11] See, e.g. Threatened Species Assessment Guidelines. http://www.environment.nsw.gov.au/resources/threatenedspecies/tsaguide07393.pdf.

For example, in a previous court case,[12] there was a dispute as to whether individuals of the Wallum Froglet species located on either side of a road were one single or two separate populations. If the individuals were part of a single population, the court experts agreed that a proposed development would not have as significant an impact on the species as a whole because only half of the population would be destroyed (those individuals to the north of the road). However, if the individuals were regarded as two separate populations, then a significant impact would occur to one of the populations, because that population would be destroyed by the development.

The Court referred to the National Parks and Wildlife Services definition of viable local population[13] and found that because there was likely to be only limited exchange of genetic material between the individuals on either side of the road, they were two separate populations, and therefore the development would have a significant impact on the Wallum Froglet.

4. Determining the biodiversity values of a site

An adequate description of the biodiversity values of a site will require appropriate on-ground surveys and literature reviews. In general, the biodiversity assessment should clearly identify:

- The area over which surveys were undertaken (surveys should appropriately cover the entire study area),
- The survey method and effort used (this should be described in sufficient detail to enable a person to repeat the survey),
- The geographical units within which surveys are undertaken, and
- The literature reviewed to determine the likely occurrence of species in the area (e.g. National Parks Atlas).

Survey timing and species detectability

Timing of species surveying is crucial for biodiversity assessments. Surveying for a species at an inappropriate time of year can result in the gathering of inaccurate data. While some species are detectable at any time of the year many species, particularly threatened species, are always difficult to detect. Some species remain dormant at certain times of the year or are impossible to identify unless in flower (e.g. orchids), some are active only during particular periods (e.g. frogs and reptiles), and some are seasonal or are only present when suitable resources are available (e.g. flying foxes, swift parrot).

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[12] *Gales Holdings Pty Limited v Tweed Shire Council* (2006) NSWLEC 212.
[13] NPWS (2001) *Mitchell's Rainforest Snail* ***Thersites mitchellae*** *Recovery Plan*.

The Office of Environment and Heritage (OEH) website identifies the optimal time to survey for each threatened species in NSW through its Threatened Species Profile, which can be used to check whether a survey has been carried out at an appropriate time. Even when surveys are undertaken during the preferred survey period for a species, the actual detectability may vary.

The detectability of a species is determined by a range of factors, including:[14]

- Species behaviour,
- Species life cycle, particularly the time of the breeding season,
- Relative abundance,[15]
- Weather (rainfall, temperature and wind) at the time of the survey,
- Prevailing climatic conditions (e.g. drought, good rains, etc.),
- Season,
- Time of day,
- Amount of time spent surveying,
- Survey methods used, and
- Experience of the observer.

Survey effort

The amount of time spent surveying is a key consideration in determining the effectiveness of a survey. Surveys are often not undertaken at a site for an adequate length of time or over an adequate seasonal period to ensure a reasonable probability of detecting a species.

For example, a study in the Eden region of NSW showed that to have a 90% chance of detecting owls at a site, approximately 18 visits are necessary. Of the six species tested, the sugar-glider was the most detectable, yet at least five visits to a site are necessary to have a 90% chance of detecting this species.[16] The number of visits is related to relative abundance of species; sugar gliders are much more abundant than the owls, thus easier to find.

[14] Tyre A. J., Tenhumberg B., Field S. A., Niejalke D., Parris K. and H. Possingham (2003) 'Improving precision and reducing bias in biological surveys: estimating false-negative error rates', *Ecological Applications* (13) pp. 1790-1801.
[15] Threatened species will be less abundant and more difficult to find.
[16] Wintle B. A., Kavanagh R. P., McCarthy M. A. and M. A. Burgman (2005) 'Estimating and dealing with detectability in occupancy surveys for forest owls and arboreal marsupials', *Journal of Wildlife Management* 69(3): 905-17.

The OEH Survey and Assessment Guidelines[17] make recommendations for the minimum survey effort needed for each group of species (e.g. plants, reptiles, bats, etc.). There are also specific survey guidelines for amphibians.

These guides can be used to indicate whether the survey effort undertaken for the biodiversity assessment was likely to be adequate to detect the targeted species.

Survey methods

Surveys should follow accepted methods. The OEH survey and assessment guidelines[18] make recommendations for the appropriate survey methods needed for each group of species. These guides can be used to indicate whether the survey methods undertaken for the biodiversity assessment were likely to be adequate to detect the targeted species.

Effective monitoring is often difficult to achieve due to a lack of resources, whether this be in terms of money, people or time. Traditional methods such as territory mapping are more resource intensive due to their need for large datasets. Newer methods are considered more rapid. Overall, effective survey methods are those which produce sufficiently accurate and precise information to address all of the issues of concern.[19]

In order to form an idea of how effective a monitoring strategy has been, you can ask the following questions:

- How closely do the methods follow available guidelines?
- Has the assessment drawn trends or conclusions which may be used to determine if the environment is changing?
- Are the results clear and easy to understand? Have the most useful indicators of biodiversity health been chosen?

If a biodiversity assessment does not detect a species at a site, this does not necessarily mean that it does not currently occur at the site or will not use the site sometime in the future. For this reason, biodiversity assessments often assess threatened species on a habitat basis, using known distributions and known habitat requirements of a species.

Literature reviews

All biodiversity assessments should include a literature review. This is a desktop study which provides essential background information or can partially remedy data missing from field studies.

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[17] See: http://www.environment.nsw.gov.au/threatenedspecies/surveyassessmentgdlns.htm
[18] See: http://www.environment.nsw.gov.au/threatenedspecies/surveyassessmentgdlns.htm
[19] Reynolds, J. H., Thompson, W. L. and B. Russell (2011) 'Planning for success: Identifying effective and efficient survey designs for monitoring', *Biological Conservation* 144(5), 1595-1601.

Important information for biodiversity assessments is usually available from threatened species databases, such as the Species Profiles and Threats Database, or the Atlas of NSW. For example, some species are very difficult to survey, so previous records of distribution may need to be relied upon.

5. Description of the existing biodiversity values of the site

Once appropriate surveys have been undertaken, the biodiversity assessment should clearly describe:

- The vegetation communities and fauna species that occur at the project site and in the study area,
- The threatened species and ecological communities that occur at the project site and in the study area, and
- The connectivity of the vegetation at the project site and in the study area, including identification of the size and shape of the patch of vegetation at which the project site occurs. This is important for understanding species movement.

6. Assessing the impacts of development

The biodiversity assessment should include:

- A clear description of the likely short and long term direct and indirect impacts (including impacts on linked or neighbouring sites) during the construction and operational phases of the project,
- The amount of habitat/number of individuals to be impacted,
- Classification of species/vegetation types, and
- Life history and population parameters.

Information should be provided in sufficient detail to allow an independent reader to understand how and when different species may be using the study area.

Maintain or Improve test

The key question for some biodiversity assessments will be whether the proposal will maintain or improve biodiversity values. For example, the BioBanking, biocertification and property vegetation plan schemes are all predicated on a ‘maintain or improve’ test.

Maintenance is the preservation of a system in its current state. This means no degradation, but also no improvement. Improvement seeks to make a system better, whether this makes it more efficient, increases the number of native species, or

makes the system healthier. If an ecological community has been degraded, improvement will involve rehabilitation or recovery.

The scientific principles that underpin the maintain or improve test are:[20]

- biodiversity encompasses the structure, function and composition of ecological communities on the scale of the site, the region, the state and the nation ;
- examples of all ecological communities are managed for biodiversity conservation; and
- and sites are assessed relative to broader-scale conservation priorities, according to the ecological community's conservation status
- long-term viability of ecological communities is enhanced, and sites are assessed according to their viability.

Management hierarchy

Methods of managing biodiversity can be divided into three categories:

1. Avoidance,
2. Mitigation, and
3. Compensation/ Offsetting.

Managers should aim firstly to avoid impacts, turning to mitigation and then compensation or offsetting only as last resorts.

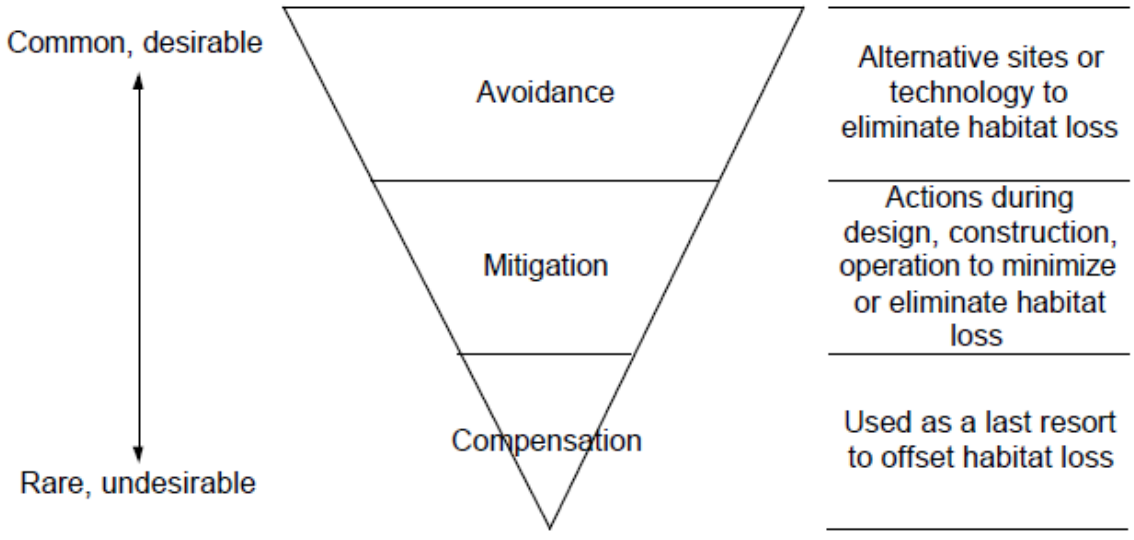

Figure 1: Methods of management. From UNEP, EIA Training Resource Manual, Topic 7, Slide 4.

[20] See: DECCW (2009) *The Science Behind BioBanking,'* p. 3. Available at: http://www.environment.nsw.gov.au/resources/biobanking/09476biobankingscience.pdf

Avoidance

Avoidance will be employed when the risk to the environment is considered too great to carry out the proposed activity. Methods of avoidance include not undertaking the project or elements of the project, or changing the development site. This should be the first method of management to be considered. Avoidance is particularly important in circumstances where there are threatened species present.

Mitigation

Mitigation or minimisation should have second priority when considering which method of management to undertake. Mitigation schemes include scaling down or redesigning the proposed development, or controlling the risk to the environment through the use of alternative technologies or additional environmental protection measures.

A good mitigation plan will be site specific but should use best practice guidelines for managing both the impact and the environmental features that will be impacted on. When assessing the quality of a mitigation plan, ask:

- Will the proposed mitigation activities minimise environmental harm?
- Do they use best practice measures?
- Are they at the appropriate scale?
- How long will the mitigation actions last?
- What will happen to them once the development is complete?
- Will they actually be effective?

The following plans may provide a guide to appropriate mitigation activities.

1. ***Priorities action statement***

The Priorities Action Statement[21] (PAS) guides recovery and threat abatement plans, intended to assist in the improvement of the status of threatened species and ecological communities. It is essentially a mission statement for managing key threatening processes and rehabilitating threatened terrestrial species and ecological communities. The PAS must be taken into account if a listed species is present in the project area.

There is also a PAS for both freshwater and saltwater fish.[22]

[21] See: http://www.environment.nsw.gov.au/threatenedspecies/pas.htm
[22] See: http://pas.dpi.nsw.gov.au/Recovery_ThreatAbatement/PAS.aspx

2. Recovery Plans

A recovery plan may be developed once a species or ecological community has been identified as threatened. Recovery plans contain background information on the species or ecological community, including habitat and distribution, identified vulnerabilities and risks, as well as future actions to be taken to assist recovery. Once drafted, these plans must be put on display for members of the public to view and comment upon before final plan approval. These plans are carried out by an agency identified in the plan.

Recovery Plans for terrestrial species and communities can be viewed here.[23]

Recovery Plans for marine/aquatic species and communities can be viewed here.[24]

3. Threat Abatement Plans

A threat abatement plan coordinates the actions of government agencies, industry and communities to remove or reduce the impact of a key threatening process. As with recovery plans, these plans must be put on display for members of the public to view and comment upon before final approval. Further, the plans are reviewed periodically, allowing the public to provide continual feedback at each review. These plans must be taken into account by public authorities when considering proposals.

Threat Abatement Plans for terrestrial species and communities can be viewed here.[25]

Threat Abatement Plans for terrestrial species and communities can be viewed here.[26]

Compensation/Offsetting

Allowing compensation for the impacts on biodiversity is the least desirable outcome and should only be undertaken as a last resort. Compensation tools include rehabilitation, restoration and offsetting. Offsetting is the conservation of habitat at another site (the offset site) with environmental values similar to the development site. There are several offset schemes applying to threatened species and native vegetation regimes.

At the very least, an offset program should include:[27]

- Appropriate use of the management hierarchy,

[23] See: http://www.environment.nsw.gov.au/threatenedspecies/recoveryplans.htm
[24] See: http://www.dpi.nsw.gov.au/fisheries/species-protection/conservation/what/recovery
[25] See: http://www.environment.nsw.gov.au/threatenedspecies/ThreatAbatementPlans.htm
[26] See: http://www.dpi.nsw.gov.au/fisheries/species-protection/conservation/what/recovery
[27] ANEDO (2011) *Submission on the draft EPBC Act environmental offsets policy*.

- Enhancement of environmental outcomes, rather than simply maintenance of existing values,
- Use of like-for-like offsets, i.e. where the offset is similar in nature and location to the affected area,
- Integration of additionality,
- Minimal or no use of indirect offsetting methods, and
- Strong reinforcement of program requirements.

1. ***BioMetric Tool***

The BioMetric tool was developed by the Office of Environment and Heritage to assist with the management of native vegetation.

The BioMetric tool is applied when assessing land clearing applications and preparing property vegetation plans (PVPs).

Under this scheme, biodiversity values may be maintained or improved by the use of biodiversity offsets in certain circumstances. To demonstrate: at an offset site, there is a gain in biodiversity values due to effective management actions. At a land clearing site, there is a loss of biodiversity value. To maintain or improve biodiversity overall, the total gain of biodiversity must equal or exceed the total loss.

The BioMetric method does the following:

- Establishes rules for when land clearing can maintain or improve biodiversity values by using offsets;
- Quantifies the current biodiversity values at a land clearing site and an offset site and then predicts the loss in biodiversity values at a land clearing site and the gain in biodiversity values at an offset site;
- Establishes offsetting rules, which determine the suitability and appropriate location of an offset site relative to the land clearing site; and
- Establishes guidelines that allow the Director-General, in certain circumstances, to override a decision made through the method.

2. ***BioBanking Assessment Methodology***

The BioBanking Scheme ienables 'biodiversity credits' to be generated by landowners who commit to enhance and protect biodiversity values on their land through a biobanking agreement. These credits can then be sold, generating funds for the management of the site. Credits can be used to counterbalance (or offset) the impacts on biodiversity values that are likely to occur as a result of development. The

credits can also be sold to those seeking to invest in conservation outcomes, including philanthropic organisations and government.[28]

The BioBanking Assessment Methodology provides rules for the number and type of credits that a development site will require in order to offset its impacts and thus improve or maintain biodiversity values. The methodology also provides rules for the number and type of credits that can be created from undertaking conservation management at a biobank site.[29]

For more information on BioBanking, see the BioBanking Fact Sheet.

3. BioCertification

Biocertification is an assessment process that maps an area's biodiversity at a landscape scale. The process involves .identifying and protecting areas of high conservation value and land that is suitable for development.[30]

The Biocertification Assessment Methodology is used to determine whether biodiversity certification will improve or maintain biodiversity values. In sum, the methodology assesses the loss of biodiversity values on land proposed for development and the impact, or likely impact, of proposed conservation measures on land proposed for biodiversity conservation (including conservation measures that are proposed to be implemented in the future).[31]

Responding to biodiversity assessments

When responding to a biodiversity assessment, consider the following points:

- A submission containing arguments supported by technical information will have a far greater chance of success than a submission containing only unsupported assertions.
- You don't need to be a scientist or have a technical background to write a good submission supported by technical information. The most important skill to have is an ability to research and to know where to get the information you need to support your arguments.
- There is a large amount of publicly accessible, free, and easy to use technical information available for use in writing submissions, particularly if you have access to the internet. See below for more information.
- By law the decision-maker must consider the environmental impacts of a proposal in making a decision on whether to approve it, refuse it, or approve it

[28] See: http://www.environment.nsw.gov.au/biobanking/
[29] See: http://www.environment.nsw.gov.au/biobanking/assessmethodology.htm
[30] See: http://www.environment.nsw.gov.au/biocertification/
[31] See: http://www.environment.nsw.gov.au/biocertification/#methodology

with conditions. Therefore, if you are opposed to a development on environmental grounds, the main purpose of writing your submission should be to highlight the potential environmental impacts of the proposal, to try to influence the decision-maker.

Getting help from others

In gathering technical and scientific information for use in your submission, the most important first step is to identify other people that can help. Other sources of help include:

- local conservation groups and local professionals;
- your local OEH office for information on flora and fauna;
- your local DPI office and Local Land Services for information on natural resources and fish;
- the Royal Botanic Gardens, Sydney, for information on flora; and
- the Australian Museum for information on fauna.

Using publicly accessible resources

There is also a large amount of publicly accessible, free, and easy to use technical information available for use in writing submissions. A few of these are described here but see Appendix One for more resources.

One of the most useful resources is the NSW Natural Resources Atlas[32] – this gives you access to natural resource databases held by a range of government agencies. It allows you to search for environmental information for any given area in NSW, for example, the location of threatened species, key fauna habitats and corridors, wetlands, salinity risk areas, and water quality data.

The BioNET atlas[33] gives you access to flora and fauna databases maintained by the National Parks and Wildlife Service, the Royal Botanic Gardens, the Department of Primary Industries and the Australian Museum. It allows you to search for information on the location of flora and fauna for any given area in NSW, including threatened species.

The OEH has a number of resources on its website, including a knowledge strategy that focuses on biodiversity, climate change, coastal and marine environments,

[32] See: http://www.nratlas.nsw.gov.au/
[33] See: http://www.bionet.nsw.gov.au/

landscape management, pollution and water and wetlands.[34] There is also a page dedicated to threatened species.[35]

The NSW Scientific Committee, which determines which species, populations, and ecological communities should be listed as being threatened, publishes Final Determinations on the internet for each item listed, which contain a lot of useful information. At the end of each Final Determination there is a useful reference list of scientific information relating to that listed item.[36]

Writing your own submission

See EDO NSW's tips on writing submissions.[37]

Following is a short hypothetical example of how you can use some of the technical information addressed above in writing a submission on a Statement of Environmental Effects (SEE). This example applies equally well to other forms of biodiversity assessment.

A SEE has been prepared to support a development application to Council for a proposed residential development in north east NSW. The majority of the proposal would be located on mostly degraded land that has been cleared in some areas. Some of the proposal would be located on land comprising intact native vegetation, which has been identified as an endangered ecological community. The SEE concluded that because only a small patch of the endangered community would be cleared, there would be no significant impact on the community.

You decide to write a submission to Council on the SEE because you believe the impacts on flora and fauna would be significant.

The first thing to do is identify people that are also opposed to the proposal and try to use any relevant skills that they may have.

The second thing to do is to identify publicly available resources that can help you write your submission. For example:

1) Have a look at the OEH flora and fauna survey guidelines, which are available on the internet. These indicate generally that the survey undertaken for the SEE was inadequate, and was well below the effort recommended in the guidelines.

    - Identify this in your submission, using direct quotes where possible, and reference page numbers.

[34] See: http://www.environment.nsw.gov.au/knowledgestrategy/index.htm
[35] See: http://www.environment.nsw.gov.au/threatenedspecies/
[36] See: http://www.environment.nsw.gov.au/committee/AboutTheNSWScientificCommittee.htm
[37] See: http://www.edonsw.org.au/having_your_say_before_a_decision_is_made

2) Use the NSW Natural Resource Atlas, which is available on the internet, to identify the environmental features of the site. The Atlas identifies that the site is located within an area mapped by the OEH as a key regional fauna habitat corridor. This is not identified in the SEE.

    - Contact your local OEH office for further information about the habitat corridor and try to get an ecologist to give an opinion on the likely impacts of the proposal on the corridor.

    - In your submission, identify that the SEE has not assessed the potential impacts of the proposal on the habitat corridor, and directly quote from the OEH about the conservation significance of the corridor, referencing page numbers.

3) Use BioNET, which is available on the internet, to check that the SEE has considered all the relevant threatened species known to occur within the area of the proposal. Contact your local OEH office or the Royal Botanic Gardens, Sydney, to confirm this.

4) Obtain the Final Determination of the NSW Scientific Committee for the endangered ecological community, which is available on the internet. This identifies that the endangered community may include areas that are degraded, meaning that the community may occur across the entire proposal site.

    - Try to get an ecologist to give an opinion on whether the endangered community occurs in the degraded areas of the proposal site, and whether the proposal would have a significant impact on this community.

In your submission, directly quote the relevant sections of the Final Determination and identify that the SEE has not adequately assessed the impact of the proposal on the endangered community because it was determined that the community does not occur in the degraded areas of the proposal site.

Read more about writing an effective submission on our *Have Your Say* resource or our Fact Sheet.

Glossary

Key terms used in this Fact Sheet

Additionality – a concept which requires that offsets must provide a benefit in addition to benefits in current existence. For example, a purported offset site located in an area which would be protected anyway does not have additionality.

Assessment of significance – a seven-part test which must be considered when determining a development's impact on biodiversity. The test considers the impacts of the proposed development on local populations of threatened species and ecological communities. See also: Threatened species assessments under Part 4 and Part 5 the *Environmental Planning & Assessment Act*.

Bilateral agreement - a written agreement between the Commonwealth and a State with the objects of protecting the environment and promoting conservation and the ecologically sustainable use of natural resources. To find out if there is a bilateral agreement between your state and the Commonwealth, see the Australian Environment Department site on bilateral agreements.

BioBanking – a voluntary alternative to the current threatened species assessment process, set up under the *Threatened Species Conservation Act* to control clearing and offset its effects.

BioCertification – recognises high biodiversity values in a landscape. The process to achieve BioCertification involves the identification of a development area's biodiversity and the proposal of measures to improve or maintain this biodiversity.

Biodiversity offset - an activity that improves biodiversity values at one site to compensate for impacts to biodiversity values at another site.

Biogeographical – relating to both the biodiversity and geography of a region.

BioMetric tool – an assessment tool designed to identify and quantify biodiversity in a study area.

Designated development – developments which are listed under Schedule 3 of the *Environmental Planning and Assessment Act Regulation 2000*. These developments require consent, and tends to have a higher impact, or is located in or near an environmentally sensitive area, such as a wetland.

Development application – an application for approval of the carrying out of a development. Each local government area has its own sets of guidelines involving development applications, which can be found on the relevant Council websites.

Distribution - the geographic area over which a species occurs.

Ecological community – an assembly of two or more populations of different native Australian species inhabiting a particular area.

Ecological gradient or ecocline - a slow spatial transition from one ecological community to another, with no obvious boundary.

Ecological process – collective term for the various systems, cycles and processes which sustain ecosystems.

Ecosystem - an ecological unit consisting of communities of organisms and their interactions with non-living environment.

Endemic – found only in a particular area. Australia has a large number of endemic species due to its geographical isolation, which makes protecting its biodiversity particularly important.

Environmental Impact Assessment (EIA) – any recognised procedure which examines, identifies and provides suggestions for ways of dealing with environmental impacts as a result of a development.

Environmental Impact Statement (EIS) – a document which provides information on the study site prior to development, as well as predictions of development impacts and recommendations for mitigation or offset.

Environmental Planning Instrument (EPI) – legal documents regulating land use and development, including State Environmental Planning Policies and Local Environment Plans, but not Development Control Plans.

Gazette - to publish in the **NSW Government Gazette.** Publication of official Government orders and notices in the Gazette is required by law.

Geographical unit – smaller divisions of the main study area created for ease of surveying.

Improve or maintain – there is no impact by a development to critical areas of a site, or, if there is impact, these can be offset.

Indirect offsetting methods – offsetting activities which are carried out by a third party on behalf of the project proponent. These will not directly provide offset values, but support a general biodiversity outcome and may be offsite, or may be in the form of research under some of the available offsetting schemes.

Key threatening process – a process which threatens or may threaten a native species or ecological community.

Local occurrence – occurs in the study area and in nearby connected areas if the movement of individuals and exchange of genetic material can be shown.

Matters of National Environmental Significance (MNES) – aspects of the environment considered under the *EPBC Act* Part 3, Division 1 to be of importance to Australia as a whole.

Offset site – area set aside for the purpose of offsetting the negative environmental impacts of a development.

Population – an occurrence of a species in a particular area

Property vegetation plan (PVP) – a non-compulsory but legally binding agreement made under the *NV Act* between a landowner and their local government which details how the land will be managed.

Proponent – the individual/group responsible for the development for which the approval is sought.

Recovery plan – a plan developed with the intent to return a species or community to a state where its survival is certain. May be made under the *TSC Act* or the *FM Act*.

Significant impact – Under the *EP&A Act*, guidelines are set out in section 5A. Significant impact is generally where adverse impacts on the life cycle, habitat and survival of a species or population are identified.

Species Impact Statement (SIS) – A document which provides information on species at the study site prior to development, as well as predictions of development impacts on species and recommendations for mitigation or offset.

State significant development - development considered to be of State significance by a State Environmental Planning Policy or Gazetted Minister's orders under Part 4.1 of the *Environmental Planning & Assessment Act 1979*.

State significant infrastructure – infrastructure considered to be of State significance by a State Environmental Planning Policy or Gazetted Minister's orders, under Part 5.1 of the *Environmental Planning & Assessment Act 1979*.

Statement of Environmental Effects (SEE) – a statement needed as part of any development, which includes environmental impacts and identification methods, and mitigation methods.

Study area – area being assessed, usually the development site and any areas outside it that are likely to be directly or indirectly affected by the development.

Threat Abatement Plan – a report which includes background information on a key threatening process and current and future management strategies to control it. May be made under the *TSC Act* or the *FM Act*.

Viable local population – a sustainable population of a species where the individual members occur or are likely to occur in the study region. Individuals with similar genetic characteristics in surrounding areas are also included if they use or are likely to inhabit the study area.

Useful websites

BioNET is administered by the Office of Environment and Heritage and contains historical and current native flora and fauna records in NSW: http://www.bionet.nsw.gov.au/.

NSW Natural Resource Atlas is a compilation of natural resource databases held by a range of government agencies. It allows you to search for environmental information for any given area in NSW: http://www.nratlas.nsw.gov.au.

Atlas of Australian Birds is a database containing records of birds throughout Australia. Searches may be conducted by specified area or by individual species/groups. This database is produced by Birds Australia: www.birdsaustralia.com.au.

PlantNET is a taxonomic database administered by the Royal Botanic Gardens, Sydney, which provides a comprehensive listing of indigenous plants, potentially dangerous weeds and information on rare and threatened plants: http://plantnet.rbgsyd.nsw.gov.au**.**

BioMaps is the Australian Museum's Website, which includes the Master Names List of NSW fauna, has mapping capabilities using GIS software, and contains interactive diagnostic keys: http://www.biomaps.net.au/biomaps2/.

EPBC Act Database is an on-line database managed by the Department of Sustainability, Environment, Water, Populations and Communities which contains information relevant to the EPBC Act such as current listings for threatened species and ecological communities, migratory species, Ramsar sites, world heritage areas and nature conservation reserves: http://www.deh.gov.au/erin/index.html.

Local Government Databases – to request information on a project by project basis contact the relevant local council. http://www.dlg.nsw.gov.au/DLG/DLGHome/dlg_LocalGovDirectory.asp?index=1&CN=ALL