

Environmental Protection Authority

Guidance for the Assessment of Environmental Factors

(in accordance with the
Environmental Protection
Act 1986)

Environmental Offsets - Biodiversity

No. 19

September 2008

Western Australia

FOREWORD

The Environmental Protection Authority (EPA) is an independent statutory authority and is the key provider of independent environmental advice to Government.

The EPA's objectives are to protect the environment and to prevent, control and abate pollution. The EPA aims to achieve some of this through the development of environmental protection Guidance Statements for the environmental impact assessment (EIA) of proposals and schemes.

This document is one in a series being issued by the EPA to assist proponents, responsible authorities, consultants and the public generally to gain additional information about the EPA's thinking in relation to aspects of the EIA process. The series provides the basis for EPA's evaluation of, and advice on, proposals or schemes subject to EIA. The Guidance Statements are one part of assisting proponents and responsible authorities in achieving environmentally acceptable outcomes. Consistent with the notion of continuous environmental improvement and adaptive environmental management, the EPA expects persons responsible for development to take all reasonable measures to protect the environment.

This Guidance Statement sets out the EPA's advice on when offsets are considered to be appropriate as part of the EIA process for proposals and schemes and how proponents should address and present environmental offsets in those instances. The advice complements and should be read in conjunction with Position Statement No. 9 *Environmental Offsets* (EPA, 2006) which provides the EPA's overarching position on environmental offsets.

While guidance is provided specifically in relation to Part IV of the Western Australian *Environmental Protection Act 1986*, persons proposing development are reminded to ascertain any responsibilities they may have in regard to this issue under other regulatory requirements.

This Guidance Statement has the status of "Final" which means it has been reviewed by stakeholders and the public. The EPA has signed off the Guidance Statement and published it although it will be updated regularly as new documents and information become available.

I am pleased to release this document which now supersedes the draft version.

A handwritten signature in blue ink, appearing to read 'P. Vogel', with a long horizontal line extending to the right.

Dr Paul Vogel
CHAIRMAN
ENVIRONMENTAL PROTECTION AUTHORITY

September 2008

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Guidance Statement No. 19

Guidance for Environmental Offsets - Biodiversity

Key Words: environmental offset, biodiversity offset, direct offset, contributing offset, net environmental benefit, mitigation, residual environmental impact

1 PURPOSE

Guidance Statements are developed by the Environmental Protection Authority to provide advice to proponents, responsible authorities and the public generally about the minimum requirements for environmental management in Western Australia which the EPA would expect to be met when the EPA considers a proposal or scheme during environmental impact assessment (EIA) under Part IV of the *Environmental Protection Act 1986*. The generic process for Guidance Statements is set out in Appendix 1.

This Guidance Statement is termed 'Final' and thus the EPA expects that proponents and responsible authorities will give full attention to the information provided when they submit proposals or schemes for assessment.

This Guidance Statement specifically addresses environmental offsets for proposals or schemes that impact on biodiversity. It should be read in conjunction with Position Statement No. 9 *Environmental Offsets* (EPA, 2006). The main purpose of this Guidance Statement is to provide more specific advice than in the Position Statement, particularly in relation to the technical application of biodiversity offsets and the presentation of offsets packages to the EPA.

The EPA advocates the goal of 'net environmental benefit' as this approach recognises that the environment has been significantly compromised in the past and halting and reversing environmental decline is now a priority.

This Guidance Statement provides advice for the development of offsets packages by proponents which the EPA will assess on a case-by-case basis against the principles in Position Statement No. 9 *Environmental Offsets*. It outlines the EPA's expectations for environmental offsets associated with development proposals and planning schemes subject to EIA. This information will assist industry, proponents, environmental and planning consultants, specialist scientists, decision makers and the community involved in developing or assessing options for environmental offsets packages.

The scope of this Guidance Statement applies to all proposals and schemes referred to the EPA that have significant adverse impacts on *biodiversity* assets of 'high' or 'critical' value. The Guidance Statement is relevant to all environmental issues,

matters and advice for which the EPA has jurisdiction (recognising that some government agencies have offset policies and / or requirements for which the EPA does not provide advice).

This Guidance Statement does not apply to offsets associated with greenhouse gas emissions and other pollutant emissions. The Department of Environment and Conservation is providing advice to the EPA to develop an assessment framework for greenhouse gas emissions. It is expected that this framework will include guidance on carbon offsets. Other pollutant offsets can be developed in accordance with direction provided in EPA Position Statement No. 9 *Environmental Offsets* (EPA, 2006).

Proponents and responsible authorities are encouraged to consider development proposals and planning schemes in accordance with this Guidance Statement. Proponents and responsible authorities should endeavour to demonstrate to the EPA that the requirements of this Guidance Statement are incorporated into proposals and schemes, in a manner which ensures that they are enforceable and auditable.

2 THE ISSUE

The EPA's Position Statement No. 9 *Environmental Offsets* (EPA, 2006) established a policy approach for the use of environmental offsets in the context of EIA in Western Australia. This policy approach forms the basis for this Guidance Statement. Through practical application of this Position Statement over time, it has become apparent that several issues require further clarification in relation to the policy's interpretation and implementation.

Specifically, these issues require further clarification about:

- the EPA's expectation for the appropriate use of environmental offsets;
- application of offset principles in relation to significant adverse impacts to biodiversity assets – in particular the 'like for like or better' principle;
- situations where the application of offset principles are extremely difficult or challenging to implement;
- timing of offset considerations during the EIA process; and
- transparency and auditing effectiveness of offsets packages.

This Guidance Statement addresses the above issues. It is emphasised that both the Position Statement and Guidance Statement should be used in conjunction when considering biodiversity offsets.

3 THE GUIDANCE

This Guidance Statement provides direction for developing biodiversity offsets with an emphasis on meeting the principles set out in EPA Position Statement No. 9 *Environmental Offsets* (EPA, 2006). It is not considered appropriate at this stage to be prescriptive about offsets given the complexity of environmental impact assessment, limits of existing knowledge and the unique circumstances of specific

proposals or schemes. In the future, criteria and formulae may be developed in association with new tools for implementing offsets.

3.1 Determining when it is appropriate to apply offsets

In the context of EIA, several criteria need to be assessed by proponents to determine if they have significant adverse residual impacts and therefore if it is appropriate to consider offsets.

- **Significant adverse impacts to assets**

Where there are significant adverse impacts to 'critical' assets, the EPA will assess the proposal or scheme through EIA. The EPA, in providing its advice to the Minister, will adopt a presumption against recommending approval of proposals or schemes where significant adverse environmental impacts affect 'critical' assets.

Proposals or schemes may also be referred to the EPA where they have significant adverse impacts to 'high' value assets. These assets represent those environmental assets that are in good to excellent condition, are considered valuable by the community and/or government, but are not identified as 'critical' assets.

In some cases, a proposal or scheme that has significant impacts on a 'high' value asset may be found to be environmentally unacceptable whether or not a comprehensive offsets package is proposed.

A broad list of 'critical' assets has been defined in Position Statement No. 9 *Environmental Offsets* (EPA, 2006). Following requests for further information, the EPA will develop a publication to further identify 'critical' and 'high' value assets.

The EPA does not generally undertake EIA in relation to 'low to medium' value assets. These represent those assets that are in less than good to excellent condition as recognised by government agencies and/or community. Impacts to this class of assets are usually dealt with by relevant government agency approvals processes.

- **Exhaustion of mitigation options**

Mitigation, in an environmental context, refers to a sequence of considerations designed to help manage adverse environmental impacts, which includes (in order of preference): avoidance, minimisation, rectification, reduction and offsets (see EPA, 2006).

The first four steps of the mitigation sequence (described above) need to be exhaustively considered before a proposal or scheme that is likely to have significant adverse impacts is presented to the EPA. The EPA will be interested in the extent, quality and likelihood of success of mitigation activities undertaken to reduce significant adverse impacts on 'critical' and 'high' value assets.

The EPA is unlikely to find a proposal or scheme acceptable where a proponent has not reasonably demonstrated or documented attempts to mitigate significant adverse impacts. Proponents must specify the various mitigation activities that have been or will be undertaken, preferably using a risk assessment approach.

In demonstrating adherence to the mitigation sequence, proponents must also justify the selection of the preferred proposal or scheme in the context of other viable alternatives that were identified during the scoping or planning phase. Therefore, proponents are required to state the reasons for giving preference to a proposal or scheme that has more significant adverse residual impacts compared to other viable alternatives (see Fig.3 Environmental offsets reporting form).

It should be noted that what is considered to be accepted on-site industry / business standards or practice, or best practice environmental management, should not be considered as offsets. Rectification activities, as part of the mitigation sequence, may include on-site repair, rehabilitation and restoration. This usually occurs post-impact or following proposal or scheme completion and may require long periods of time to repair the project site. It should be noted that on-site rectification (i.e. repair, rehabilitation and restoration) is typically regarded nowadays as industry best practice in most circumstances and is of itself not an offset (see EPA, 2006a).

- **Significance of adverse environmental impacts**

The *Environmental Impact Assessment (Part IV Division 1) Administrative Procedures 2002* (the Administrative Procedures) provide a set of considerations that the EPA will take into account when assessing the significance of a proposal (see Definitions). The EPA will also consider the advice of relevant government agencies when determining significance.

The 'significance' of a proposal or scheme is also likely to influence the extent and type of environmental offsets that may be required. The more significant the adverse residual impact is, the more likely a substantial offsets package will be necessary. While the set of considerations in the Administrative Procedures may help a proponent understand how the level of significance for an adverse environmental impact is derived, it should be remembered that it is the EPA's interpretation of 'significance' on a case-by-case basis that influences the decision to assess, the consideration of offsets and the EPA's advice to the Minister for the Environment.

Figure 1 sets out the steps that the EPA recommends are followed by proponents and others to help them decide whether offsets are likely to be appropriate for proposals or schemes that are subject to EIA.

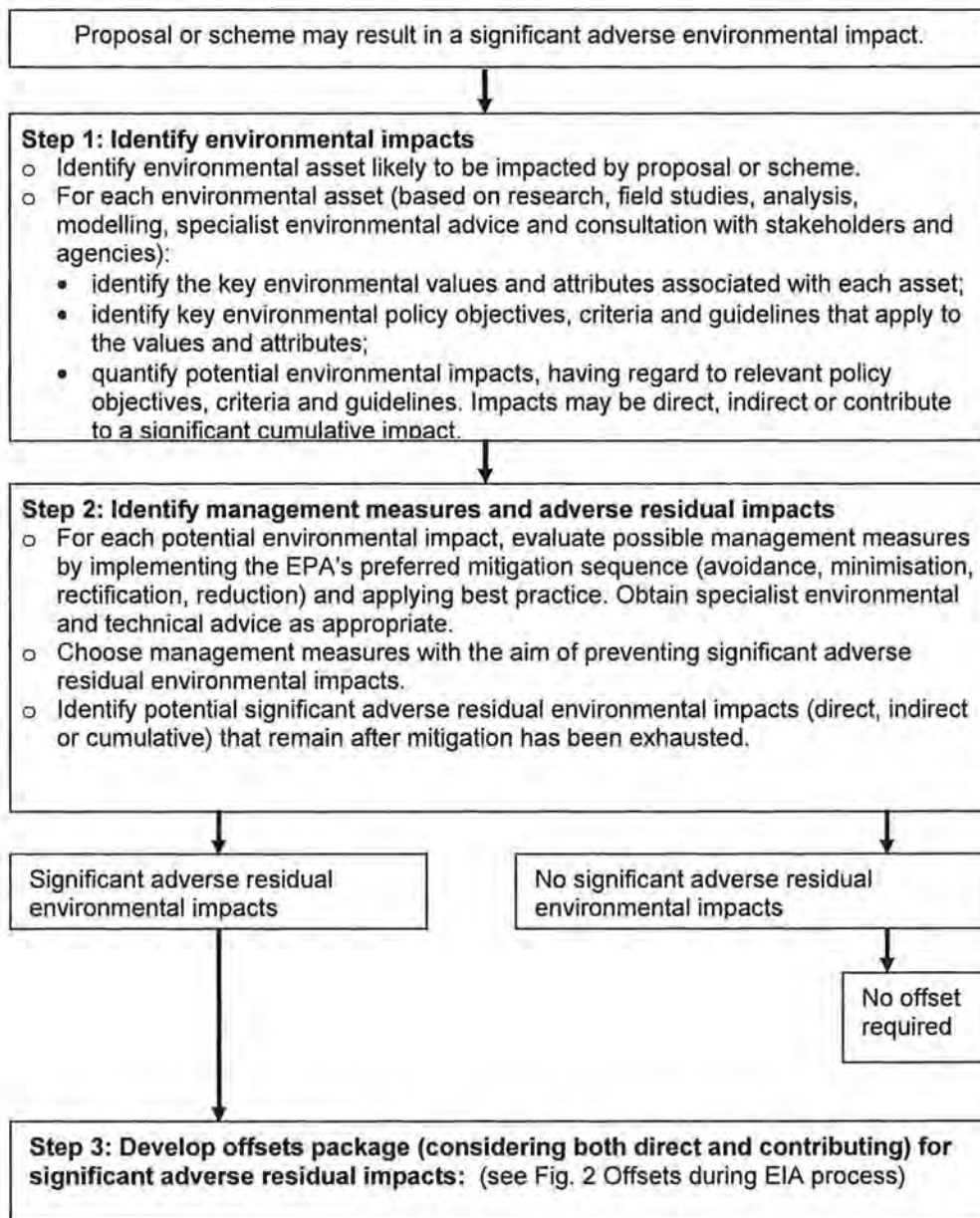


Figure 1: Steps to assist proponents and responsible authorities to consider whether offsets are likely to be appropriate for proposals and schemes referred to the EPA.

These steps involve the collection and analysis of information that will also assist proponents to formulate an offsets package and report to the EPA, should an offsets package be prepared.

3.2 Formulating an environmental offsets package

This Guidance Statement provides additional information in relation to developing an environmental offsets package with the emphasis on complying with the principles outlined in Position Statement No. 9 *Environmental Offsets* (EPA 2006). While in the future there could be a role for a more prescriptive approach to some types of impacts or offsets, it is not currently favoured given the general complexity and range of offsets issues.

Where the application of offsets is considered appropriate, it is the proponent's responsibility to identify and develop a suitable offsets package and demonstrate that the offsets meet the EPA's principles. In assessing the adequacy of proposed offsets, the EPA itself will not negotiate, nor propose modification to, the components of an offsets package. Government agencies will provide advice to the EPA about a proposal or scheme and its offsets package. In turn, the EPA provides its recommendations to the Minister for the Environment who then decides whether a proposal or scheme (and its associated offsets package) should be approved or not.

Principle A: Environmental offsets should only be considered after all reasonable attempts to mitigate adverse impacts have been exhausted.

It is emphasised that environmental offsets should only be considered after all other reasonable attempts to mitigate adverse impacts have been exhausted and evidence of this should be clearly demonstrated when presenting an offsets package (see Fig.3 Environmental offsets reporting form). The EPA will be looking for clear demonstration that all mitigation measures have been exhausted prior to consideration of offsets.

Principle B: An environmental offsets package should consider direct offsets and contributing offsets, as appropriate.

For each significant residual environmental impact, potential direct and contributing offsets need to be identified. Different proposals or schemes are likely to have a particular range of offsets activities that could comprise an acceptable offsets package. Priority should be given to formulating an offsets package that will deliver the maximum long-term environmental benefit with a high level of certainty that it can be successfully implemented in the context of 'like for like or better'.

To identify potential environmental offsets, give consideration to:

- advice and guidance from relevant government agencies, experts and industry;
- environmental policies, strategies and reports relevant to the environmental factor being impacted and the particular location (e.g. consider local / regional biodiversity strategies, regional natural resource management plans, recovery plans and community initiatives); and

- offsets precedents or programs in place within and outside Western Australia, noting that precedent **should not be relied on** as the application of offsets in WA is still evolving, is applied on a case-by-case basis, and subject to continuous improvement and refinement.

An offsets package must not include:

- (a) actions that are accepted on-site environmental management requirements for the proposal or scheme;
- (b) actions that would be readily implemented in the absence of the proposal or scheme; or
- (c) actions that comprise part of the environmental management measures for another proposal or scheme or are funded by other parties.

Addition of land to the conservation estate as a direct offset should be in line with State Government conservation strategies and provided with upfront funding to enable its protection and rehabilitation to a state that requires minimum active management over time.

Principle C: Environmental offsets should ideally be ‘like for like or better’.

In achieving a ‘like for like or better’ outcome, biodiversity related offset sites should:

- (a) have similar or better environmental values and attributes (e.g. same vegetation complex, similar species compositions, landscape functions) in the vicinity of the impacted site (i.e. same local area) or in the same bioregion if a better environmental outcome could be achieved; and / or
- (b) be in accordance with regional biodiversity strategies that address regional development and priority areas for protection.

Key **environmental values and attributes** of the asset subject to significant adverse residual impact need to be thoroughly investigated and documented. This may involve considerable expert consultation, community consultation, site studies, background research and modelling.

Environmental values can be defined as particular values or uses of the environment that are important for a healthy ecosystem or for public benefit, welfare, safety or health and which require protection from the effects of pollution and harm (EPA, 2006). The legal definition used in the *Environmental Protection Act 1986* is provided in the definitions section.

Environmental values fall into two groups: ecological values and beneficial uses. Ecological values, such as ecosystem health, relate to the protection of the inherent composition, structure and functioning of the natural ecosystem (see EPA, 2005a). Ecological structure refers to the natural proportionality of habitat types within ecosystems and the natural size class frequencies and abundances / biomasses of populations of organisms within each of those habitat types. Ecosystem composition includes the representative biota within an ecosystem (e.g. list of flora and fauna present within the site). Ecological functions include the provision of food, habitat and shelter for native biota, maintenance of interactions between species (e.g. pollination, dispersal, mutualism, competition and predation), cycling, filtering and retention of nutrients, maintenance of soil / sediment processes, maintenance of hydrological and geochemical processes and ecological linkages at a range of scales, etc.

Beneficial uses of the environment are utilitarian because they relate to specific human uses, for example recreation, farming, fishing, cultural and spiritual uses (EPA, 2005a). Beneficial uses are conducive to public benefit, public amenity, public safety, public health or aesthetic enjoyment. They are identified and declared under section 35(2) of the *Environmental Protection Act 1986* to be a beneficial use to be protected under an approved policy.

Environmental attributes refer to a specific environmental asset and can be defined as a characteristic associated with or which supports an environmental value (e.g. a beneficial use or ecosystem health) (adapted from Guidance Statement No. 33; EPA 2008). Environmental attributes may include:

- types / units (where possible to be based on recognised classification systems) in relation to landscape, landforms, vegetation, flora, fauna, hydrology, soils, geology and geomorphology;
- endemism;
- native vegetation structural integrity;
- scale, shape and linkages of natural areas relevant to ecological processes;
- natural diversity (e.g. a range of vegetation types, total flora species or genera);
- rarity (e.g. rare and priority flora, threatened fauna, threatened ecological communities, other unusual or special attributes);
- important fauna habitat;

- significance (e.g. international, national, regional, local, etc.) may be related to biophysical factors and social surroundings (including indigenous or non-indigenous heritage) as identified through legislation, community objectives, management categories, government listings, etc. (see Guidance Statement No. 33 for examples of biophysical factors and social surroundings); and
- other special attributes (e.g. fauna associations).

In order to assess the degree to which 'like for like or better' principle has been achieved, environmental values and the quantum of loss or modification of environmental attributes associated for each significant adverse residual impact should be identified and compared quantitatively with those to be gained through successful implementation of the proposed offset.

The term "better" in the context of 'like for like or better' in reference to a biodiversity asset could mean:

- better condition / less disturbance;
- vegetation structure more similar to undisturbed examples of the vegetation type;
- better ratio of area to perimeter for an ecosystem;
- more natural ecological diversity;
- greater number of rare and otherwise significant species;
- a higher ranked threatened species or community;
- more secure tenure;
- enhanced beneficial uses of the environment;
- larger area to be rehabilitated / restored / acquired for conservation, compared with area impacted;
- contiguous with existing reserve; and
- enhanced biological corridors or linkages between conservation reserves.

Where offset sites consistent with the principle of 'like for like or better' are not available in the same local vicinity as the impact site, then offsets sites associated

with different but comparable attributes / values or better should be selected in the same bioregion to achieve a better environmental outcome; or, select multiple sites that address the individual environmental attributes or values at risk (e.g. separate sites that address species, hydrology and linkage attributes specifically). In these instances, the significance of the impacted site may determine whether alternative offset sites are appropriate.

Proponents should allow sufficient time and resources to identify relevant environmental values at the impact site and offset sites and to quantify their associated environmental attributes. This may require specially timed surveys to be undertaken (e.g. spring flora surveys) or data to be collected for a significant period of time (i.e. more than one year).

Principle D: Positive environmental offset ratios should apply where risk of failure is apparent.

Positive environmental offset ratios should apply where the offset is unlikely to achieve a net environmental benefit outcome (EPA, 2006). That is, positive offset ratios should be applied to account for the potential risk that the offset may not fully succeed in the long term.

This principle prevents complex ecosystems or unique species (that are difficult to restore, rehabilitate or re-establish) from being systematically degraded over time, particularly through cumulative impacts. Therefore, in these instances, the size of the offset to impact ratio should be greater than 'like for like' and be proportional to both the importance of the environmental asset being impacted and the likelihood that the offset is unlikely to achieve a 'net environmental benefit' outcome.

Accordingly, in the case of offsets for significant adverse residual impacts on complex ecosystems or unique species it is expected that positive offset ratios will be applied in almost every case due to the difficulty in restoring, rehabilitating or re-establishing these. Where the age of the vegetation (e.g. mature trees) is a factor, positive ratios should be set to compensate for the loss of valuable fauna habitat. In the case of acquisition of land for conservation, the ratio of 'area of addition to area cleared' should also be a positive ratio greater than 1:1.

Principle E: Environmental offsets must entail a robust and consistent assessment process.

To assist in the selection of a robust, feasible and appropriate offsets package, the offsets package should thoroughly investigate the following aspects.

An environmental offsets reporting form is provided in this Guidance Statement to help summarise the relevant information for the EPA (see Fig. 3) and is available from the EPA website (www.epa.wa.gov.au).

Aim of the offset

- Clearly define the offset and the objectives for the offset. The objectives should identify the significant adverse residual impact being offset, the intended outcomes of the offset activity and the extent to which these will counterbalance the residual environmental impact. For example, objectives for offsets involving habitats should refer to the degree to which offsets should aim to restore structural and functional elements of overall ecological integrity.
- In achieving the principle that environmental offsets should ideally be 'like for like or better', identify the environmental values and quantify the environmental attributes for each residual impact and compare them with those associated with the proposed offset.

Type of offset

- Determine whether the offset is a direct offset or a contributing offset.

Governance requirements

- Identify the processes and approvals required to take place prior to implementing the offset.
- Identify whether the participation of a third-party will be required to ensure the satisfactory implementation of the offset project. Determine what contractual arrangements will be required to identify and resolve the legal obligations and implications of offsets activities where third-parties are involved.
- Determine the on-going maintenance and management measures that will need to be established to ensure the offset fulfils its objectives.
- Identify completion criteria for the offset, based on the objectives and intended outcomes for the offset project.
- Consider the type of monitoring activities that will need to be undertaken to audit its implementation.
- Consider how the offset will be enforced. Civil contracts for the enforcement of some offsets may be an option.

- Consider use of memorandum of understandings (MOUs) or agreements to identify responsibilities and accountability.

Feasibility / risk assessment

- Identify the proposed form of land tenure / details registered on title for the offset site and whether tenure is likely to be a barrier to implementation (e.g. access to site or security of tenure).
- Determine the timeframe for implementation to fulfil the intended objectives and whether this is reasonable.
- Determine how long the offset benefit is intended to last in accordance with Principle H.
- Evaluate expertise needs. Does the proponent have sufficient expertise, or access to expertise, to implement the offset successfully and in a timely manner.
- Consider whether all relevant parts of the proponent's organisation will support the offset.
- Identify the risks / impediments to successful implementation of the offset and what contingencies will be put in place to address risks.
- Identify any limitations in scientific knowledge required to develop and implement the offset successfully.
- Consider what fluctuations in environmental conditions may affect implementation (e.g. climate variability).
- Assess the offset's likelihood of success.

Consultation

- Identify what consultation has occurred or proposed. Consider the outcomes of consultation to date.
- Consider other relevant issues or information needed to assist in the selection of an adequate offsets package.

Principle F: Environmental offsets must meet all statutory requirements.

The environmental offsets package must meet all statutory, planning and regulatory requirements and ideally should be acceptable to key stakeholders, any involved third parties and approval authorities.

When a proposal or scheme is referred, the EPA may decide not to assess it. In reaching this decision, the EPA may consider that there are other government approval processes to ensure desired environmental outcomes are achieved (e.g. clearing permits and land use planning approvals). If a proposal or scheme is not assessed by the EPA, environmental offsets may be required through these other approval processes. Other approval processes that have the potential to require some types of environmental offset activities include:

- land use planning approvals, including approvals for proposals or schemes proposing impacts on Bush Forever sites and conservation areas;
- clearing permits under Part V *Environmental Protection Act 1986*;
- approvals for land managed under the *Conservation and Land Management Act 1984* ;
- approvals under the *Wildlife Conservation Act 1950*;
- approvals administered by the Department of Industry and Resources; and
- approvals under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (noting that this is outside State jurisdiction).

The EPA supports the implementation of offsets regardless of whether formal statutory assessment under the *Environmental Protection Act 1986* is triggered or not.

Principle G: Environmental offsets must be clearly defined, publicly registered, transparent, auditable and enforceable.

According to this principle, an offsets package must:

- have clearly defined objectives, key performance measures, responsibilities for management and outcome-based completion criteria;
- be auditable so that compliance with objectives can be monitored;
- be enforceable for as long as the impact occurs;
- be clearly documented in the offsets reporting form (Fig. 3);
- be able to produce environmental benefits in an agreed timeframe; and

- be in place (including any bonds or guarantees, where applicable) before development commences.

Principle H: Environmental offsets must ensure a long lasting benefit.

Biodiversity offsets must ensure a long lasting environmental benefit and be capable of being maintained into the future even after the proposal or scheme has been completed (i.e. demonstrate that ongoing costs and responsibilities in maintaining the offset are capable of being met). This may involve management and protection commitments being divested to responsible third parties to ensure the offset is seen through to completion. Therefore, funding for long term management should occur over a time period necessary to improve the condition of the land to a state where ongoing management would be minimal.

3.3 Challenges with implementing offsets.

Proponents should be reminded that, in many instances, it has been found challenging to design offsets packages that can be readily implemented in a timely way, are enforceable and will achieve a net environmental benefit outcome. There are various issues associated with the implementation of offsets including technical limitations (e.g. difficulty in restoring or rehabilitating some types of impacted environments; limited science to evaluate offsets; problems associated with tenure especially in the marine environment; or lack of availability of suitable offset sites). Should this type of situation become apparent, it must be documented (with supporting evidence) for consideration by the EPA.

- **Offsets in the marine environment**

EPA Guidance Statement No. 29 provides guidance relevant to offsets in the marine environment (EPA, 2004a). Offsets (particularly direct offsets) in the marine environment pose significant technical and tenure-related difficulties. Proponents should be mindful of the difficulties in developing and implementing marine-based offsets before proceeding with these.

Firstly, there are few proven techniques for, and little documentary evidence of, successful broadscale restoration of the structure and function of marine habitats. This means that proposals to directly offset loss of, or damage to, benthic habitats through restoration will generally be accompanied by a high degree of uncertainty about success. Attempts to restore meadows of long-lived seagrass species are underway in WA with mixed degrees of success depending on the species and location. The environmental conditions at different geographic locations are thought to be key drivers of the degree of success of such restoration actions, however there is significant uncertainty about the range of environmental conditions required for successful restoration.

Secondly, the ability to develop and implement permanent or enduring offsets will be restricted because of the lack of private tenure, and the ability of individuals to legally control access to, or undertake activities within, the marine environment.

Therefore, when developing offsets for the marine environment, proponents will need to consider the mechanisms and processes available to them to ensure security of the offset. Early consultation with relevant authorities is recommended.

- **Cumulative impacts**

Where cumulative impacts arise from incremental development (e.g. loss of native vegetation or deterioration of surface and ground water quality from urban development, multiple industries or mining activities) the EPA urges decision-making authorities or proponents (as appropriate) to consider how overall environmental objectives will be met. As part of this process, it is helpful to determine the scope for offsets at a strategic stage of planning. Using offset mechanisms within a strategic framework, rather than on an individual proposal or scheme basis is generally more likely to assist in reducing overall environmental impacts.

3.4 Presenting environmental offsets to the EPA

- **When to present an offsets package**

If after demonstrating a rigorous consideration of the mitigation sequence, proponents identify significant residual impacts, consideration of offsets may emerge early in the assessment process and the timing of their presentation may relate to the availability of a suitable offsets package. It is also recognised that consideration of offsets may become apparent in the final stages of the Environmental Impact Assessment process during the proponents' preparation of their final EIA document.

- **How to present an offsets package**

If a proposal or scheme is being formally assessed by the EPA, then proponents, responsible authorities and their consultants are advised to report on:

- the description of studies / investigations and program of consultation required to develop environmental offset options in their environmental scoping document (depending on the level of assessment); and / or
- the details of the proposed offset project in their environmental review document that is then released for public review and consultation (depending on the level of assessment). See the *Environmental Impact Assessment (Part IV Division 1) Administrative Procedures 2002*.

A suggested format for reporting an offsets package as part of the proponent's assessment documentation is shown at Figure 3 (also downloadable from the EPA website at www.epa.wa.gov.au). The information requested in Figure 3 is the minimum information that should be provided to the EPA for a proposed offsets package.

If the proposal or scheme is being formally assessed by the EPA, then the information presented in Figure 3 should be presented in the proponent's environmental review documentation. The EPA will request additional information if it requires it.

An example of how to present an offset proposal is provided at Appendix 2. The hypothetical example involves a town planning scheme amendment that proposes the reservation of land for regional road purposes where the proposed road reserve impacts on regionally significant native vegetation, a wetland buffer and the conservation estate.

Details on submitting spatial data for the offsets package is provided in Appendix 4.

4 APPLICATION

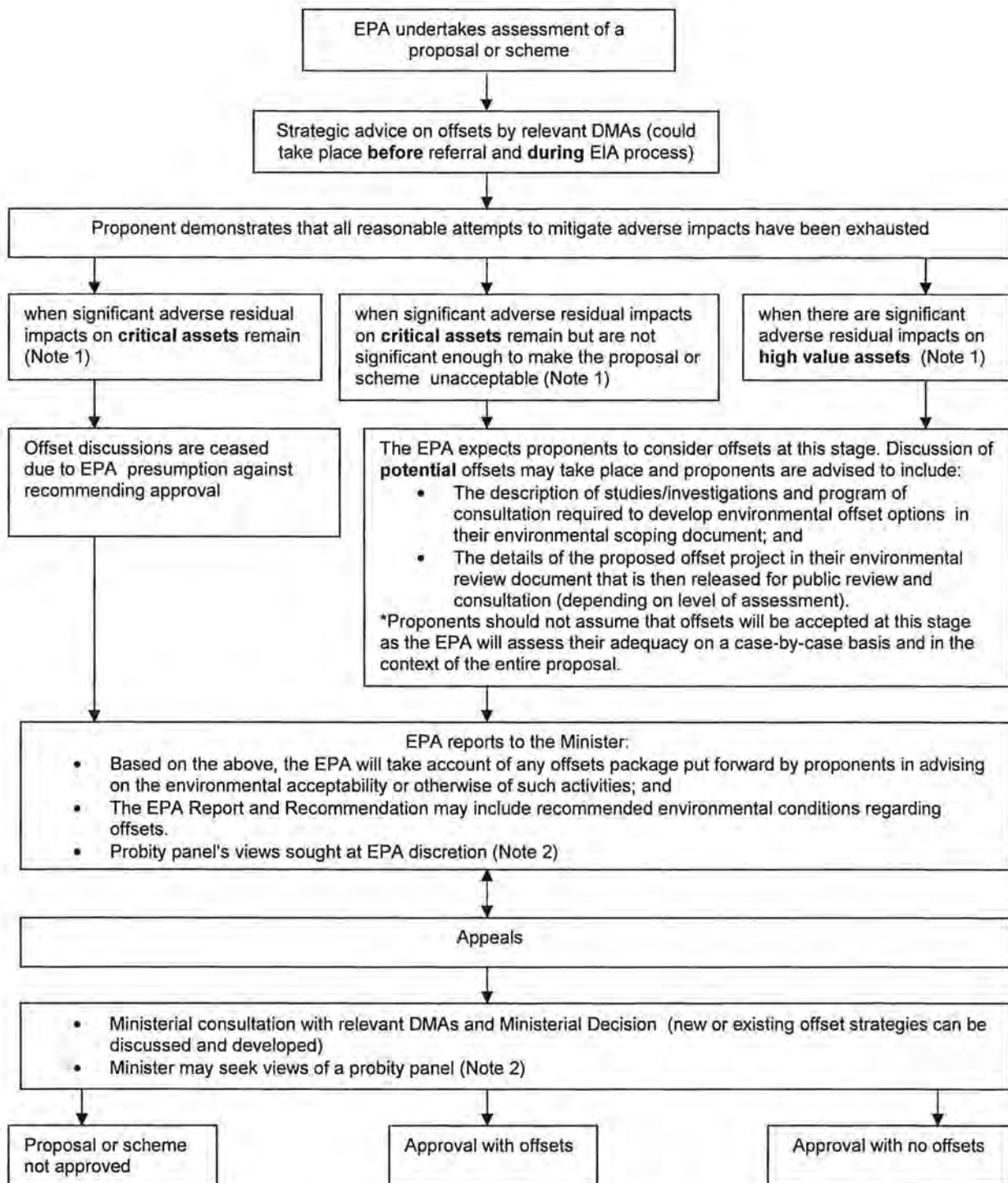
4.1 Area

This Guidance Statement applies to all new development proposals and planning schemes or scheme amendments throughout the State of Western Australia that are subject to the EIA processes set out in Part IV of the *Environmental Protection Act 1986*.

The Guidance Statement does not apply to offsets for greenhouse gas emissions.

4.2 Duration and Review

This Guidance Statement remains current until such time the EPA decides to review it. While generally the review period would be after five years, circumstances may require it to be reviewed earlier.



Note 1: Determination of 'significance' is a judgement of the EPA

Note 2: The probity panel's primary role is to provide advice on an 'as needs' basis on the appropriateness and adequacy of proposed offsets under the policy guidance framework.

Figure 2. Offsets during the EIA process

Figure 3: Environmental offsets reporting form

This table is available for download as a template from the EPA website www.epa.gov.au
 Please note that the EPA may request additional information.

Section A: Administrative information
1. Proposal or scheme name:
2. Summary of proposal or scheme:
Section B: Type of environmental asset (s) – State whether Critical or High Value, describe the environmental values and attributes
Section C: Significant impacts (describe the significant adverse environmental impacts related to the proposal or scheme before mitigation measures are applied)
Section D: Mitigation measures (describe all measures to Avoid, Minimise, Rectify and Reduce)
Section E: Significant residual impacts (describe all the significant adverse residual impacts that remain after all mitigation attempts have been exhausted)
Section F: Proposed offsets for each significant residual impact (identify direct and contributing offsets). Include a description of the land tenure and zoning / reservation status of the proposed offset site. Identify any encumbrances or other restrictions on the land that may impact the implementation of the proposed offset and provide evidence demonstrating how these issues have been resolved.

Section G: Spatial data relating to offset site/s (see APPENDIX 4)

Section H: Relevant data sources and evidence of consultation (consultation with agencies, relevant stakeholders, community and references to sources of data / information). Include details of specific environmental, technical or other relevant advice and information obtained to assist in the formulation of the offset.

5 RESPONSIBILITIES

5.1 Environmental Protection Authority responsibilities

The EPA will apply this Guidance Statement during the assessment of proposals and schemes under Part IV of the *Environmental Protection Act 1986*.

5.2 Department of Environment and Conservation responsibilities

The Department of Environment and Conservation will assist the EPA in applying this Guidance Statement in environmental impact assessment and in conducting its own functions under Part V of the *Environmental Protection Act 1986*.

5.3 Other referring agencies

The EPA encourages government to adopt a consistent and coordinated approach, as far as possible, in applying offsets. Agencies are encouraged to adopt a policy position and guidelines for the application of offsets that align with Position Statement No. 9: *Environmental Offsets*.

However, the EPA also recognises that, due to differing agency roles and legislative requirements, detailed guidelines and criteria for applying offsets may vary between approval processes. It is the proponent's responsibility to ascertain the specific requirements of the relevant approval and advisory agencies when formulating offsets.

5.4 Proponent responsibilities

Where proponents demonstrate to the EPA that the requirements of this Guidance Statement are incorporated into proposals or schemes in a manner which ensures that they are enforceable and auditable, the assessment of such proposals or schemes is likely to be assisted.

Proponents should discuss potential offsets packages with key government agencies and stakeholders before submitting an offsets package to the EPA. It is helpful for the proponent to provide evidence where possible of the views of stakeholders. However, it is recognised that agencies will have their own protocols for commencement of detailed discussions on offsets and may not be able to provide written comments at the time a proponent submits an offsets package to the EPA.

Relevant agencies may include the Department of Environment and Conservation (for biodiversity, air quality and wetlands issues), the Department of Water (for waterways, water quality, water quantity and salinity issues), the Swan River Trust (currently developing a draft nutrient offsets policy and framework for banking and trading nutrient offsets in the Swan Canning catchment), and the Department for Planning and Infrastructure (for issues involving Bush Forever sites and other significant bushland).

Budgetary requirements, offset strategy governance and a commitment to the development of an offsets implementation strategy are also the proponent's responsibilities when developing offsets packages. These components should be developed in consultation with relevant agencies, community groups, local governments, traditional owners, other industry and other stakeholders as appropriate.

6 DEFINITIONS AND ACRONYMS

6.1 DEFINITIONS

Best practice: the EPA's concept of 'best practice', as described in EPA Guidance Statement No. 55 (EPA, 2003) is that:

- "All relevant environmental quality standards must be met.
- Common pollutants should be controlled by proponents adopting Best Practicable Measures to protect the environment.
- Hazardous pollutants (for example, dioxins) should be controlled to the Maximum Extent Achievable which involves the most stringent measures available and the Best Available Technology. For a small number of very hazardous and toxic pollutants, costs are not taken into account.
- There is a responsibility for proponents not only to minimise adverse impacts, but also to improve the environment through rehabilitation and offsets."

Completion criteria: criteria that details how an approval condition or commitment will be judged to be fulfilled.

Critical assets: represent the most important environmental assets in the State that must be fully protected and conserved for:

- The State to fulfil its statutory and policy requirements;
- The State to remain sustainable in the longer term; and
- The EPA to comply with its general principles for advice and decision-making (EPA, 2006).

Cumulative impact: is the combined effect from multiple activities within a defined geographic area over a period of time (EPA, 2004a).

Endemism: (endemic) A species or other unit of classification naturally restricted to a specified region or locality (adapted from Commonwealth of Australia, 2007).

Environment: Under section 3 of the *Environmental Protection Act 1986*, means living things, their physical, biological and social surroundings, and interactions between all of these. For the purposes of this definition, the social surroundings of man are his aesthetic, cultural, economic and social surroundings to the extent that those surroundings directly affect or are affected by his physical or biological surroundings.

Environmental attribute: in relation to natural areas, 'attributes' can be defined as a characteristic associated with or which support an environmental value (e.g. beneficial use or ecosystem health) (adapted from EPA Guidance Statement No. 33).

Environmental factor: a part or an aspect of the environment. See EPA Guidance Statement No. 33 (EPA, 2008) for a checklist of environmental factors.

Environmental impact: represents an effect on the environment that leads to changes in its condition. Depending on the nature of the activity causing the impact, it may have either beneficial or adverse environmental outcomes (EPA, 2006).

Environmental offsets: commonly referred to as 'environmentally beneficial activities' undertaken to counterbalance an adverse environmental impact and achieve a 'net environmental benefit' outcome. In Position Statement No. 9 (EPA, 2006) these are discussed in terms of:

- Direct Offsets, which are environmentally beneficial activities undertaken to counterbalance an adverse environmental impact or harm, with the goal of achieving a 'net environmental benefit'. Examples of direct offsets may include ecosystem restoration (offsite), rehabilitation (offsite), land acquisition for conservation and re-establishment. See definition of 'off-site'.
- Contributing Offsets, which are environmentally beneficial activities undertaken to complement and enhance direct offset activities. Contributing offset activities may not immediately assist in a 'net environmental benefit' outcome, but instead materially add to environmental knowledge, research, management and protection, and ultimately lead to improved environmental outcomes.

The terms 'direct' and 'contributing' reflect a sequence of approach, rather than a ranking of importance.

Environmental offsets package: the set of offset activities undertaken to counterbalance an adverse environmental impact. It should consider direct and contributing offsets, as appropriate.

Environmental significance (of a proposal or scheme): The significance of a proposal or scheme in terms of its environmental effect or impact. Determination of the environmental significance of a proposal or scheme is a judgement of the EPA. The EPA's use of this term is described in Environmental Impact Assessment (Part IV Division 1) Administrative Procedures 2002 (Section 4.1.2, Western Australian Government, 2002) as follows:

"The Authority will take into consideration the environmental significance of a proposal when deciding whether the proposal will be assessed. This will include:

- (i) the extent and consequence of biophysical impacts;
- (ii) the environmental values of the area affected;
- (iii) the extent of emissions and their potential to unreasonably interfere with the health, welfare, convenience, comfort or amenity of people;
- (iv) the potential for biophysical impacts of the proposal to significantly and adversely change people's social surroundings;
- (v) the extent and rigour to which potential impacts have been investigated and described in the referral, and the confidence in the reliability of predicted impacts;
- (vi) the extent to which the proposal implements the principles of sustainability;
- (vii) the ability of decision making authorities to place conditions on the proposals to ensure required environmental outcomes are achieved; and
- (viii) the likely level of public interest, and the extent to which the proponent has consulted with interested and affected people and responded to issues raised."

Environmental value: this term is defined in section 3(1) of the *Environmental Protection Act 1986* as (a) beneficial use; or (b) an ecosystem health condition. The Act further defines these two categories as follows:

A **beneficial use** means "a use of the environment, or of any portion thereof, which is –

- (a) conducive to public benefit, public amenity, public safety, public health or aesthetic enjoyment and which requires protection from the effects of emissions or of activities referred to in paragraph (a)

or (b) of the definition of “environmental harm” in section 3A(2);
 or

- (b) identified and declared under section 35(2) to be a beneficial use to be protected under an approved policy”; and

An **ecosystem health condition** means “a condition of the ecosystem which is-

- (a) relevant to the maintenance of ecological structure, ecological function or ecological process and which requires protection from the effects of emissions or of activities referred to in paragraph (a) or (b) of the definition of “environmental harm” in section 3A(2);
 or
- (b) identified and declared under section 35(2) to be an ecosystem health condition to be protected under an approved policy”.

See definition of ‘environmental harm’ in section 3A(2) of the *Environmental Protection Act 1986*.

High value assets: represent those environmental assets that are in good to excellent condition, are considered valuable by the community and / or government, but are not identified as ‘critical assets’ (EPA, 2006).

Mitigation: in an environmental context, refers to a sequence of considerations designed to help manage adverse environmental impacts which includes (in order of preference):

1.	Avoidance	avoiding the adverse environmental impact altogether;
2.	Minimisation	limiting the degree or magnitude of the adverse impact;
3.	Rectification	repairing, rehabilitating or restoring the impacted site as soon as possible;
4.	Reduction	gradually eliminating the adverse impact over time by preservation and maintenance operations during the life of the action and
5.	Offsets	undertaking such activities that counterbalance an adverse residual environmental impact.

Natural area: a naturally vegetated area or non-vegetated areas such as water bodies (generally rivers, lake and estuaries), bare ground (generally sand or mud) and rock outcrops (EPA 2004c).

‘Net environmental benefit’ concept: aims to ensure more environmental gains occur compared to environmental losses. It refers to an overall improvement in the total extent, quality, ecological integrity and / or security of environmental assets and their values. The concept is

subject to cumulative gains and losses within a specific area, region or project (EPA, 2006).

Offsets: see environmental offsets.

Off-site: off-site carries the implication that offsets are not substitutable for accepted on-site environmental management requirements but in addition to these. That is, restoration and rehabilitation of land directly affected by a development are considered accepted on-site environmental management requirements (EPA, 2006).

Proposal: as defined in section 3(1) of the *Environmental Protection Act 1986* means a project, plan, programme, policy, operation, undertaking or development or change in land use, or amendment of any of the foregoing, but does not include scheme.

Re-establishment: has the goal of establishing a functioning self-sustaining ecosystem with strategic environmental benefit. It does not replicate pristine ecosystems. While restoration and enhancement of existing ecosystems is preferred, re-establishment may be beneficial in some instances, for example, forming a biodiversity corridor between two important ecosystems, or re-establishing ecosystems in areas of low representation.

Rehabilitation: a process where disturbed land is returned to a stable, productive and self-sustaining condition, taking future land use into account. It aims to maximise the return of biodiversity by reinstating self-sustaining and functional ecosystems based on local species. This process differs from restoration by not aspiring to fully replace all of the original components of an ecosystem.

Residual environmental impacts: are adverse environmental impacts likely to result from the implementation of new development proposals and schemes, which cannot be avoided, minimised, rectified or reduced on-site such that they are no longer significant.

Responsible Authority: in the context of a scheme, is the authority responsible under legislation for the scheme.

Restoration: ecological restoration is the process of aspiring to fully return an ecosystem to a former natural condition in terms of composition, structure, function and dynamics.

Revegetation: the return of vegetation (indigenous or otherwise) to an area.

Scheme: as defined in section 3(1) of the *Environmental Protection Act 1986* means –

- (a) a redevelopment scheme within the meaning of the East Perth Redevelopment Act 1991, or an amendment to such a redevelopment scheme;
- (b) a redevelopment scheme within the meaning of the Midland Redevelopment Act 1999, or an amendment to such a redevelopment scheme;
- (c) a master plan within the meaning of the Hope Valley-Wattleup Redevelopment Act 2000, or an amendment to such a master plan;
- (d) a redevelopment scheme within the meaning of the Armadale Redevelopment Act 2001, or an amendment to such a redevelopment scheme;
- (e) a redevelopment scheme within the meaning of the Subiaco Redevelopment Act 1994, or an amendment to such a redevelopment scheme;
- (f) an amendment to the Metropolitan Region Scheme;
- (g) a regional planning scheme, or an amendment to a regional planning scheme;
- (h) a town planning scheme, or an amendment to a town planning scheme; or
- (i) a statement of planning policy to which section 5AA(8) of the Town Planning and Development Act 1928 applies, or an amendment to such a statement.

Significant (as in significant effect or significant impact): see 'environmental significance'.

6.2 ACRONYMS

DEC	Department of Environment and Conservation
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority

7 LIMITATIONS

This Guidance Statement has been prepared by the EPA to assist proponents and the public. While it represents the contemporary views of the EPA, each proposal or scheme which comes before the EPA for EIA will be judged on its merits. Proponents wishing to deviate from the Guidance provided in this document should provide robust justification for the proposed departure.

8 REFERENCES

Commonwealth of Australia 2007, *Weeds in Australia*, Department of the Environment, Water, Heritage and the Arts, viewed 1 July 2008, <<http://www.weeds.gov.au/publications/glossary.html>>.

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Environmental Protection Authority 2004a, *Benthic Primary Producer Habitat Protection for Western Australia's Marine Environment*, Guidance Statement No. 29, EPA, Perth.

Environmental Protection Authority 2004, *EIA principles, factors and objectives – Guide to EIA principles, factors and objectives*, EPA, Perth.

Environmental Protection Authority 2004c, *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia*, Guidance Statement 56, EPA, Perth.

Environmental Protection Authority 2005a, *Environmental Protection in Natural Resource Management*, Position Statement No. 8, EPA, Perth

Environmental Protection Authority 2006, *Environmental offsets*, Position Statement No. 9, EPA, Perth.

Environmental Protection Authority 2006a, *Rehabilitation of Terrestrial Ecosystems*, Guidance Statement No. 6, EPA, Perth

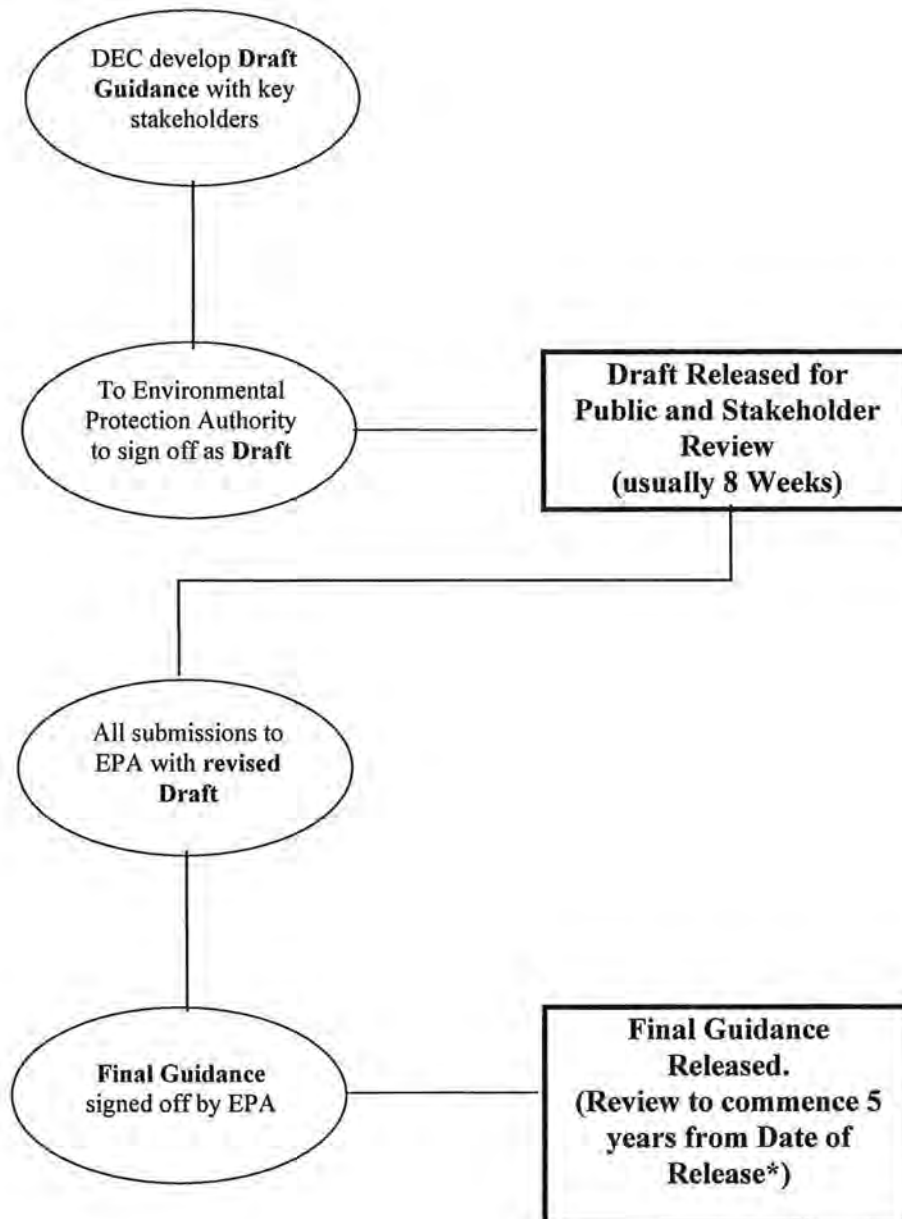
Environmental Protection Authority 2008, *Environmental guidance for planning and development*, Guidance Statement No. 33, EPA, Perth.

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APPENDIX 1

Generic flow diagram for the Guidance Statement Process



* Guidance may be reviewed earlier if circumstances require it

APPENDIX 2

Example of information on offsets to accompany a proposal or scheme

The purpose of this hypothetical scenario is to provide guidance in developing an offsets package for a range of residual impacts relevant to Western Australia. Therefore, it only outlines general information. Each proposal or scheme is different and assessed on a case-by-case basis. Proponents are reminded that this scenario is wholly hypothetical and should not be considered fixed for every proposal or scheme. Please note that the EPA may request information additional to that indicated in this form.

Section A: Administrative information
1. Proposal or scheme name: City of X TPS, No. 2, Amendment No. 3
2. Summary of proposal or scheme: This hypothetical example involves a planning scheme amendment to reserve land for regional road purposes. The widening of an existing road reserve is proposed in an environmentally sensitive location where regionally significant bushland and the buffer of a conservation category wetland would be impacted. A plan of the hypothetical road reserve, environmental features and offset site is shown on Figure A. In a case such as this, the responsible authority would also need to seek a decision on aspects of the project from other authorities such as the Conservation Commission of Western Australia. Objectives of the Planning Scheme Amendment: <ul style="list-style-type: none">• to reserve land for regional road purposes• to reserve land adjoining Nature Reserve B for the purpose of an extension to the Nature Reserve <i>(to offset the environmental impacts of the proposed road)</i>.
Section B: Type of environmental asset (s) – State whether Critical or High Value, describe environmental values and attributes.
<ul style="list-style-type: none">• Nature Reserve B is a critical asset• Threatened Ecological Community (TEC) C is a critical asset• Buffer to Lake A is a high value asset

Environmental Values: After an extensive public consultation process, the community has identified the following environmental values relating to environmental health, structure, composition, function and beneficial uses:

- Provision of food, habitat and shelter for native biota and threatened species
- Maintenance of interactions between species
- Cycling, filtering and retention of nutrients
- Maintenance of geological and geochemical processes
- Public amenity
- Cultural and spiritual uses

Section C: Significant impacts (describe the significant adverse environmental impacts related to the proposal or scheme before mitigation measures are applied)

1. Clearing of regionally significant vegetation in Nature Reserve B
2. Disturbance of bushland buffer around Threatened Ecological Community (TEC) C
3. Construction within buffer of Lake A
4. Impacts on water regime of Lake A associated with stormwater runoff from road
5. Risk of contamination of buffer and Lake A from spills

Section D: Mitigation measures (describe all measures to avoid, minimise, rectify and reduce)

Proposed on-site management measures for Nature Reserve B (Impact 1 above):

- a) Design to ensure encroachment of road formation on native vegetation in Nature Reserve is minimised.
- b) Management activities and performance criteria for rehabilitation of Nature Reserve inside proposed road reserve comprising XXX.
- c) Fencing and access plan comprising XXX.

Proposed on-site management measures for TEC C (Impact 2 above):

- a) Design to ensure encroachment of road formation on TEC buffer is minimised.
- b) Management activities and performance criteria for rehabilitation of TEC buffer inside road reserve comprising XXX.

Proposed on-site management measures for construction within buffer of Lake A (Impact 3 above):

- a) Design to ensure road formation and embankment are as far from lake as practicable, consistent with road function and safety.
- b) Construction management plan, comprising XXX.
- c) Management activities and performance criteria for rehabilitation of lake buffer inside road reserve comprising XXX.

Proposed on-site management measure for impacts on water regime of Lake A associated with stormwater runoff from road (Impact 4 above): Stormwater management plan comprising XXX

Proposed on-site management measures for risk of contamination to buffer and Lake A from spills (Impact 5 above): Spill management plan comprising XXX

Section E: Significant residual impacts (describe all the significant adverse residual impacts that remain after all mitigation attempts have been exhausted)

1. Clearing 1 ha of bushland in conservation estate (vegetation association X which is overall 29% retained and 5% reserved) comprising 0.5 ha of vegetation in good condition and 0.5 ha of vegetation in degraded condition based on Bush Forever scale (Government WA, 2000).
2. A 0.75 ha portion of conservation reserve could become more prone to 'edge effects': 0.3 ha of this is in good condition and 0.45 ha is in degraded condition; the 0.3ha portion is in buffer to Threatened Ecological Community (TEC) C and is in good condition.
3. A 0.2 ha portion of the 1ha of bushland in conservation estate is part of buffer around TEC C.
4. Up to 1.5ha of buffer of conservation category wetland (Lake A) may be impacted. The vegetation is degraded condition and includes 12 mature habitat trees.

Section F: Proposed offsets for each significant residual impact (identify direct and contributing offsets). Include a description of the land tenure and zoning / reservation status of the proposed offset site. Identify any encumbrances or other restrictions on the land that may impact the implementation of the proposed offset and provide evidence demonstrating how these issues have been resolved.

Offset 1 - Direct

Acquisition of 4ha of land to be dedicated as a nature reserve with funding to enable its protection and rehabilitation to a state that requires minimum active management over time.

Offset 2 - Direct

Rehabilitation of 0.3ha in TEC buffer in nature reserve.

Offset 3 - Direct

Rehabilitation of 2ha Lake A buffer.

Offset 4 - Contributing

Contribution to implement Lake A Wetland Management Plan.

Offset 5 - Contributing

Contribution to community education program promoting protection of local biodiversity for Nature Reserve B (TEC) and Lake A.

Section G: Spatial data requirements relating to offset site/s (see Appendix 4)

Section H: Relevant data sources and evidence of consultation (consultation with agencies, relevant stakeholders, community and references to sources of data / information). Include details of specific environmental, technical or other relevant advice and information obtained to assist in the formulation of the offset.

1. Wetland boundary and buffer studies for Lake A to satisfaction of DEC.
2. Vegetation, flora and fauna assessments for Nature Reserve B (establishing attributes, values, significance of vegetation, flora and fauna in proposed road reserve and adjoining land) to satisfaction of DEC.
3. Local biodiversity strategy, Lake A Wetland Management Plan.
4. Local government environmental policies X, Y, Z.
5. Native vegetation clearing principles in *Environmental Protection Act 1986*; EPA Position Statements 2 (protection of native vegetation), 4 (wetlands), and 9 (offsets); EPA Draft Guidance Statement 33 (environmental guidance for planning), Guidance 51 and 56 (flora and fauna studies) and Guidance 6 (rehabilitation).
6. Engineering advice and geotechnical report for road.
7. Consultation with DEC, DoW, community group X.

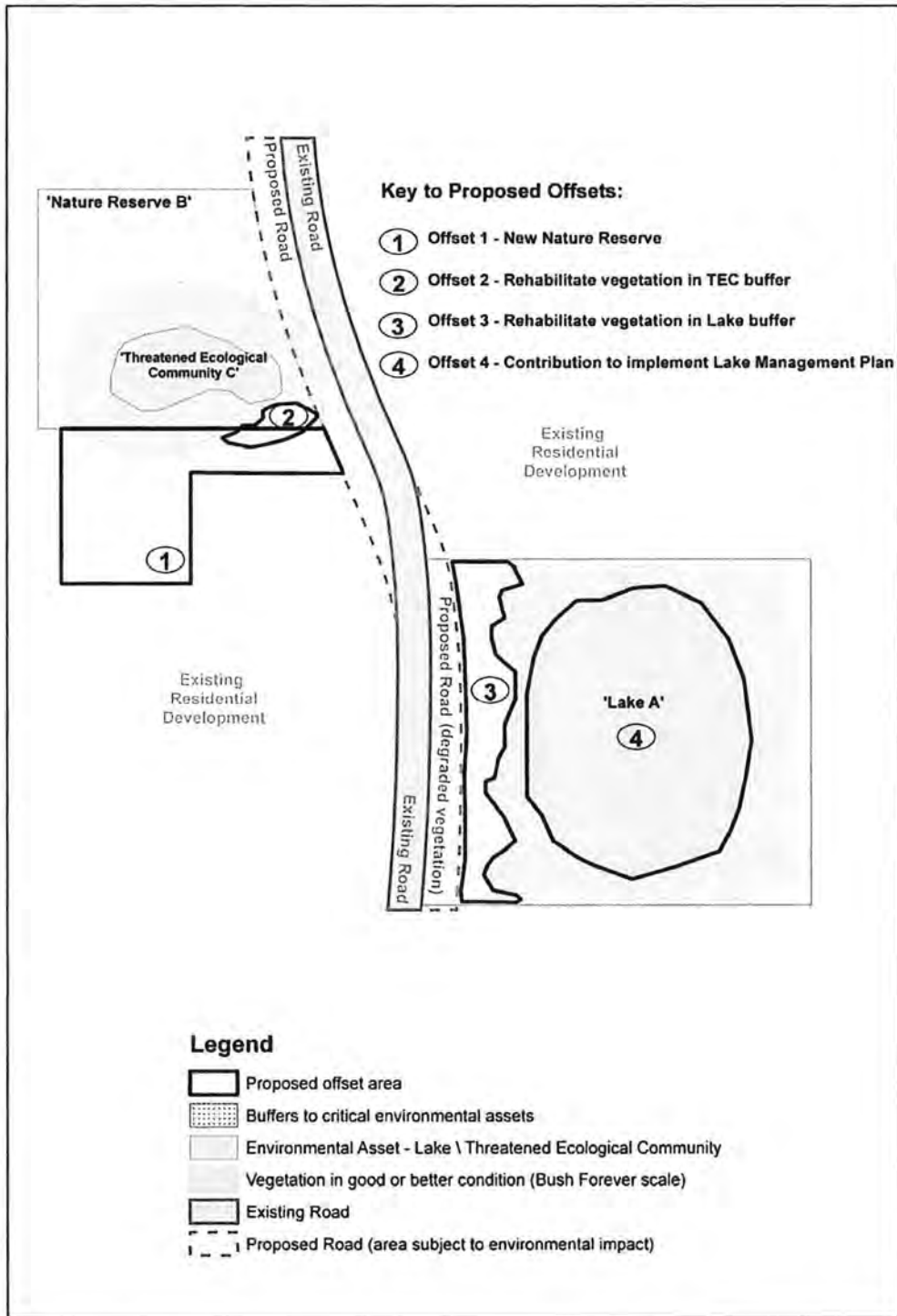


Figure A: Site plan for City of X TPS, No. 2, Amendment No. 3

APPENDIX 3

Hypothetical Offset Case Example

The purpose of this hypothetical scenario is to provide guidance in developing an offsets package for a range of residual impacts relevant to Western Australia. Therefore, it only outlines general information. Each proposal or scheme is different and assessed on a case-by-case basis. Proponents are reminded that this scenario is wholly hypothetical and should not be considered fixed for every proposal or scheme. Please note that the EPA may request information additional to that indicated in this form.

Section A: Administrative information
1. Proposal or scheme name: Titan Resources Pty Ltd – Open Pit Titanium Mine – Southwest Australia
2. Summary of proposal or scheme: Titan Resources Pty Ltd proposes to mine 6 million tones of titanium ore to produce 750,000 tonnes of heavy metal concentrate in the South West of Western Australia (approximately 50km south east of Bunbury). The proposal consists of mining a high grade titanium ore body to a maximum depth of seven metres within a lease area of 200 hectares and the return of waste material to excavated pits in an attempt to recreate soil profile and land forms. The proposal will take place over a 5 year period. The proposed disturbance footprint is estimated at 157 ha (inclusive of ore body foot print) including approximately 1200 old growth habitat trees. The lease area also provides habitat for 23 mammal species, 85 bird species, 25 reptile species and 9 amphibian species.
Section B: Type of environmental asset (s) – State whether Critical or High Value, describe environmental values and attributes
Critical Asset - Nature Reserve
1. Environmental Values: After an extensive public consultation process, the community has identified the following environmental values relating to environmental health, structure, composition, function and beneficial uses: <ul style="list-style-type: none">• Provision of food, habitat and shelter for native biota and threatened species• Maintenance of interactions between species• Cycling, filtering and retention of nutrients

- Maintenance of geological and geochemical processes
- Public amenity
- Cultural and spiritual uses

2. Environmental Attributes: 157 ha of vegetation within a section of Nature Reserve. The area has 14 vegetation complexes with the majority of the area consisting of mixed old growth habitat woodland with some pines and an understorey of peppermints and weed species. 1200 old growth habitat trees will be cleared from within the Nature Reserve. Based on surveys and assessments of the site, the **habitat area** could support 23 mammal species, 85 bird species, 25 reptile species, and 9 amphibian species. These include a number of threatened or priority species such as *Mammals*: Chuditch, Brush-tailed Phascogale, Quenda, Western Ring-tailed Possum, Brush Wallaby, and a bat species (*Falsistrellus mackenziei*) *Birds*: Square-Tailed Kite, Peregrine Falcon, Carnaby's Black Cockatoo, Baudin's Black Cockatoo, Barking Owl, Masked Owl and a number of migratory birds. Among the old growth habitat trees on the mining lease are approximately 50 trees that are of greater significance as habitat. These are important for possums, may be used by breeding water birds (such as the Australian Sheldrake) and may support the Masked Owl.

Section C: Significant Impacts (describe the significant adverse environmental impacts related to the proposal or scheme before mitigation measures are applied)

1. Vegetation clearing for pit, stockpiling, infrastructure and road networks
2. The primary impacts on fauna will be attributed to the loss of habitat associated with clearing the old growth habitat forest and the displacement of fauna through mining activities such as dust, noise, vibration, traffic. The proposal will also impact on fauna through the removal of a wildlife corridor between the Nature Reserve and nearby Baudin Hill National Park which provides similar habitat to what is proposed to be disturbed.

Section D: Mitigation measures (describe all measures to Avoid, Minimise, Rectify and Reduce)

1. The location of the pit is dependent on the location of the ore body. The proponent has committed to avoiding disturbance through consolidation of stockpiling areas, progressive rehabilitation which avoids the need for larger stockpiling areas. Highly disturbed areas will be used for facilities and infrastructure.
2. The proponent has generally restricted disturbance to the area of the ore body and so will retain approximately 30% of available habitat within the lease.
3. Vegetation and flora management plan will be developed which will demarcate sensitive areas, identify a staged approach for progressive back fill and rehabilitation and outline specific strategies that will be employed to minimise disturbance outside of the direct project footprint.
4. Significant fauna habitat will be identified (e.g. hollows, burrows, feeding habitat). Trees / vegetation that are identified as having greater habitat significance will be demarcated where possible and / or stockpiled for rehabilitation purposes. Timing of clearing will be staged to occur as close as practicable to the time of mining the cleared area, clearing will be timed to avoid the breeding cycles of threatened species where practicable, habitat trees are identified and marked and will only be cleared after inspection by a suitably qualified fauna expert.

5. The entire area will be rehabilitated and returned to the State once completion criteria have been met. A rehabilitation management plan will be developed with the target of rehabilitating 157ha of vegetation with native species dominated by similar overstorey and will include a suite of understorey species considered endemic to the area. Seed and propagation material from indigenous native grasses, herbs, shrubs and trees will be collected prior to clearing for rehabilitation purposes. Timing of topsoil removal coordinated with open cut operations to ensure minimal handling and storage.
6. Rehabilitation of the disturbed area will take into account fauna habitat values. This will include the rehabilitation of vegetation such as; fodder species, hollow forming species i.e. old growth habitat trees, ground dwelling habitat such as fallen hollows and native understorey cover. A working group will be developed to guide rehabilitation plans consistent with fauna habitat values. Relevant recovery teams will also be consulted during the development of species specific rehabilitation measures. Nesting and diurnal roosting habitat for a range of fauna will be restored where possible. Artificial habitat such as nest / roost boxes will be designed for specific target species and placed at heights, aspects and on structures appropriate to target species within rehabilitated areas and in lease areas that will be retained.
7. Ground debris and standing dead timber will be collected for restoration and rehabilitation purposes. Remaining material will be mulched for rehabilitation.
8. Soil reconstruction targets to be based on analogue values. Techniques appropriate to achieve a soil profile that has high potential to provide for development of a sustainable woodland ecosystem comparable to undisturbed sites.

Section E: Significant residual impacts (describe all the significant adverse residual impacts that remain after all mitigation attempts have been exhausted)

1. The residual impact includes loss of 157ha of vegetation including some areas of significant fauna habitat and old growth habitat trees. Approximately 1200 mature old growth habitat trees will be cleared. Although the proponent has committed to undertaking a significant rehabilitation effort, rehabilitation is not always successful and residual impacts may still remain, particularly in the short-term. Therefore to gain a net conservation benefit, offsetting 157ha of old growth habitat and / or regionally significant vegetation with similar habitat values will be required.
2. 157ha of potentially suitable habitat for fourteen conservation significant species will be disturbed. In addition, the area supports 23 mammal species, 25 reptiles, 9 amphibians and 85 bird species. Edge effects, noise, vibration, light and potential lack of success in rehabilitation activities will result in short-term and potentially longer term residual impacts. It is therefore imperative that the proponent offsets at least 157ha of conservation significant species habitat and addresses priority recovery actions for threatened species known to inhabit the mining lease.

Section F: Proposed offsets for each significant residual impact (identify direct and contributing offsets). Include a description of the land tenure and zoning / reservation status of the proposed offset site. Identify any encumbrances or other restrictions on the land that may impact the implementation of the proposed offset and provide evidence demonstrating how these issues have been resolved.

Direct Offset 1 - Contribution of 80ha of regionally significant vegetation into the adjacent Baudin Hill National Park

The proposed contribution of 80ha of vegetation adjacent to the Baudin Hill National Park is proposed to offset the 1200 individual mature old growth

habitat trees to be cleared. This area is located within the same sub catchment as the proposed site and provides a mixture of both old and regrowth habitat comprising of a native understorey in moderate condition (at least 1000 mature old growth habitat trees will be protected in the formal reserve system). With adequate management and threat abatement, it is envisaged that this area of vegetation can be restored to good condition which will require fencing, weed management and some rehabilitation. In addition, the offset site provides similar environmental values to the proposed area to be cleared. This proposed offset project will fund the following activities:

- Planning and acquisition of land into the conservation estate to be dedicated as a nature reserve. Addition of land to the conservation estate as a direct offset should be provided with upfront funding to enable its protection and rehabilitation to a state that requires minimum active management over time.
- Management costs including weed management, dieback hygiene, fencing and predator control
- Rehabilitation activity where required
- Employment of additional rangers / conservation staff to manage the acquisition and on-reserve management
- Flora and fauna surveys (baseline and ongoing monitoring to measure habitat value).

Direct Offset 2 - Rehabilitation and remediation of farmland and isolated woodland remnants adjacent to currently vegetated areas

This offset project involves the identification of priority remnants of regionally significant woodland for remediation, revegetation and rehabilitation with a long-term goal of restoration. These areas will be located outside the mining lease, but within close proximity as far as practicable. This will enhance nearby available habitat and improve connectivity between the lease, Nature Reserve, Baudin Hill National Park and isolated remnants scattered throughout farmland within the catchment area. Combined with the existing vegetation retention areas at the Titan Resources' lease, the proposed rehabilitation works, and the 80ha of old growth habitat woodland proposed for addition to the Baudin Hill National Park, the overall net gain in regionally significant vegetation over an estimated 20 year period will be doubled. This offset project includes the following actions:

- Identification of priority / regionally significant woodland remnants for remediation and rehabilitation
- Acquisition and / or covenanting of identified priority remnants
- Destocking / fencing / threat abatement (where relevant) for priority remnants
- Ongoing management and partnership development with landholders and community groups or government agencies.
- Ongoing monitoring and associated management.

Contributing Offset – Management of threatened species habitat

Contributions towards priority recovery actions as identified in Recovery Plans and/or by recovery teams for each threatened species such as the Carnaby's Black Cockatoo, brush-tailed phascogale and the chuditch will be provided. This will include habitat protection measures, research, translocation, captive breeding, wild population monitoring, and off reserve conservation such as conservation covenants on private land. The following

actions will be undertaken for this project:

- Work in consultation with recovery teams and DEC to determine priority species and priority recovery actions to be addressed (consistent with Recovery Plans and Interim Recovery Plans where these exist)
- Undertake research, translocations and captive breeding programs in partnership with relevant research institutions
- Undertake on-ground actions in partnership with relevant landholders, community groups and government agencies
- Monitor success of fauna recovery actions where relevant.

Section G: Spatial data requirements relating to offset site/s (see Appendix 4)

Section H: Relevant data sources and evidence of consultation (consultation with agencies, relevant stakeholders, community and references to sources of data / information). Include details of specific environmental, technical or other relevant advice and information obtained to assist in the formulation of the offset.

APPENDIX 4

Guidelines for Submitting Proposed Offset Boundaries as Spatial Data

This appendix describes the nature of proposed offset boundaries required to be submitted as spatial data to the EPA as part of the environmental impact assessment of a proposal or scheme.

What is spatial data?

Spatial data is digital information which can be used in computer mapping software; this information is also referred to as GIS or CAD data.

Why are offset boundaries required to be submitted to the EPA as spatial data?

The EPA considers offset sites in the context of spatial data and uses this to;

- i) find what environmental assets and issues are on or near the proposed offset
- ii) serve as an administrative record
- iii) communicate where the EPA has made decisions to others and their processes
- iv) support transparency and to audit the effectiveness of the process

What are the specifications required?

Proponents are required to submit geo-referenced GIS or CAD data on disc, depicting the proposed offset extent, conforming to the following parameters:

- i) datum: GDA94
- ii) projection: Geographic (latitude/longitude) or Map Grid of Australia (MGA)
- iii) format: ESRI shapefile, geodatabase or coverage, Microstation or AutoCAD
- iv) where a series of offsets are proposed, each should be individually mapped
- v) each mapped boundary should be clearly labelled (CAD) or attributed (GIS)

