Preliminary identification of key issues relating to the draft Biobanking Assessment Methodology

November 2007

1. Introduction

This document sets out preliminary comments by the Environmental Defender's Office (**EDO**) on the draft BioBanking Assessment Methodology (**assessment methodology**), which has been developed by the Department of Environment and Climate Change (**DECC**). It should be read in conjunction with:

1. The assessment methodology, which can be found at: www.environment.nsw.gov.au/threatspec/publicconsult.htm.

2. EDO's previous submissions on the BioBanking scheme, which can be found at: www.edo.org.au/edonsw/site/policy.php.

The purpose of this document is to assist community groups understand key issues and to provide a basis for seeking comments from the community and scientists on the assessment methodology over the next two months.

The EDO will also prepare a list of key issues relating to the draft Regulation, once the Regulation is made available on the DECC website.

We welcome your comments in relation to this document and also seek your comments on all aspects of the BioBanking scheme. All documents currently on public exhibition can be found at: www.environment.nsw.gov.au/threatspec/publicconsult.htm.

We will be making a detailed submission to DECC on all aspects of the BioBanking scheme, including the assessment methodology, by February 1, 2008.

Our preliminary comments on the assessment methodology relate to:

- Potential benefits of the assessment methodology
- General concerns about the use of offsets
- Red flag variations by the Director-General
- Other concerns about the red flag rules
- Adequacy/accuracy of the underlying data
- Assessing biodiversity values and predicting impacts
- Offsetting rules, and
- Monitoring.

For further information on the issues raised in this paper, or for further discussion on aspects of the assessment methodology, please contact Tom Holden, EDO Scientific Director, at tom.holden@edo.org.au or 02 9262 6989.

The text in bold below is defined and explained in the assessment methodology.

2. Potential benefits of the assessment methodology

The EDO recognises that the current threatened species assessment process has many problems and is failing to adequately conserve biodiversity in NSW. We are of the view that the assessment methodology has the potential to greatly improve the threatened species assessment process in NSW.

However, the potential benefits of the methodology depend on how it is applied under the BioBanking scheme (some of these details are not yet publicly available (eg. the draft Regulation)). Also, we have serious concerns about the red light variation process (see below) and the environmental contributions process, which we believe undermine the ecological integrity of the methodology and are likely to negate these potential benefits.

In the context of the current threatened species assessment process, the potential benefits of the assessment methodology are:

1. It potentially improves scientific objectivity.
2. It potentially improves consistency.
3. It potentially improves transparency.
4. It greatly improves the amount of ecological data available.
5. It requires consideration of a more comprehensive range of biodiversity attributes.
6. It significantly improves the process for determining the adequacy of offsets.
7. It potentially better considers the cumulative impacts of developments.
8. It potentially minimizes the potential for a developer to 'shop around' for a consultant.

3. General concerns about the use of offsets

The assessment methodology relies largely on the use of offsets to ensure a development **improves or maintains biodiversity values**, although offsets are not able to be used in all circumstances.

We are concerned about the widespread use of offsets as a mechanism to protect biodiversity. We have outlined our general concerns about offsets in previous submissions (please refer to www.edo.org.au/edonsw/site/policy.php).

The use of offsets to meet a goal of 'improve or maintain' biodiversity values has significant limitations, which relate to:[1]

1. The gain in biodiversity values that can be achieved relative to the loss:

    a. Offsets that involve the protection of existing good quality vegetation may result in a loss equivalent to the area impacted.

    b. Offsets that involve the restoration of habitats are subject to significant scientific uncertainty in terms of the gains that can be achieved.

2. The difficultly in measuring the equivalency of any gain in biodiversity values relative to the loss:

    a. Ecosystems are very complex and biodiversity values are difficult to quantify. No two patches of vegetation have equal biodiversity value.

    b. Methodologies to quantify biodiversity values must necessarily be relatively simplistic and based on a number of significant assumptions.

3. The time-lag between losses in biodiversity values and gains: offsets almost always involve a short-term loss in exchange for a long-term gain.

4. The difficulty in ensuring compliance: offsets have a poor track record of compliance and considerable resources are required to ensure compliance.

4. Variation of red flags by the Director-General

Our main concern with the assessment methodology relates to the ability of the Director-General to determine that a development that gets a **red flag** may still **improve or maintain biodiversity values** if he/she is of the opinion that the **assessment protocols** have been met and the red flag is unreasonable and unnecessary.

We are of the view that the assessment protocols have significant potential to undermine the ecological integrity of the assessment methodology. The red flag rules are designed to limit the widespread use of offsets in recognition of the significant limitations of using offsets to meet an 'improve or maintain' goal.

Our concerns regarding the variation process are outlined in a letter to DECC, which can be found at: www.edo.org.au/edonsw/site/policy.php. In summary, our main concerns are:

1. The variation process establishes a parallel assessment process that leaves significant room for the Director-General to make subjective judgments on whether a development can improve or maintain biodiversity values. This undermines the scientific objectivity and transparency of the assessment methodology.

[1] Gibbons, P. and Lindenmayer, D. (2007) 'Offsets for land clearing: No net loss or the tail wagging the dog?' *Ecological Management and Restoration* 8: 26-31.

2. Many applications for a **biobanking statement** would include an application to vary a red flag. This means that the Director-General and not the assessment methodology would be making a decision on whether a development can improve or maintain biodiversity values in many cases.

3. Many patches of vegetation in urban areas, including threatened ecological communities (**TECs**), are likely to meet the **assessment protocols** and will therefore be regarded as being of **low viability**. This means the assessment methodology will be unprotective of many TECs.

4. The variation process is inconsistent with the variation process under the *Native Vegetation Conservation Act 2001* both in terms of the definition of low condition vegetation and the variation process. This creates a situation where the regulatory framework in rural areas is more protective of higher quality vegetation than the framework in urban areas.

5. Other concerns about the red flag rules

Our other main concerns relating to the **red flag** rules are:

1. A **vegetation type** or **TEC** is able to be cleared down to zero in a Catchment Management Area (**CMA**) if it is in **low condition** or **poor condition**. Many TECs are likely to exist largely in low or poor condition.[2] We are concerned that the assessment methodology does not consider scarcity or conservation status irrespective of vegetation condition in such circumstances (ie. there is no 'safety net' for ecological communities that exist largely in a degraded state).

2. Vegetation in **low condition or poor condition** may play an important functional role irrespective of scarcity or conservation status, particularly in certain circumstances, such as in over cleared landscapes, or as riparian or roadside corridors.[3] We are concerned that the assessment methodology does not provide a mechanism to consider the functional role of low condition vegetation in such circumstances.

3. We are unclear about how **identified populations** or **threatened species that cannot withstand further loss within a CMA** were determined (eg. what data was used, what criteria was used, what level of expert input was involved?). This information must be made publicly available to ensure transparency. Judgments on the threatened species that cannot withstand further loss are effectively equivalent to judgments on the significance of an impact on threatened species made by consultants under the current threatened species assessment process, which are publicly available.

4. We are unclear about the scientific basis for the red flag rule that relates to the threshold of 70% cleared for vegetation types. This rule is consistent with the

[2] See the NSW Scientific Committee Final Determinations at: www.nationalparks.nsw.gov.au/npws.nsf/Content/List+of+Scientific+Committee+determinations

[3] Manning, A. et al. (2006) 'Scattered trees are keystone structures – implications for conservation' *Biological Conservation* 132: 311-321; Lindenmayer, D. et al. 'General management principles and a checklist of strategies to guide forest biodiversity conservation' *Biological Conservation* 131: 433-445.

targets in the *National Objectives and Targets for Biodiversity Conservation 2001-2005*.[4] However, these targets appear to be based largely on policy decisions rather than science.[5]

6. Accuracy/adequacy of the underlying data

The ecological integrity of the assessment methodology relies heavily on the accuracy/adequacy of the data that underlies it, which is contained in a number of biodiversity databases.

Our main concerns are:

1. We are unclear about how the biodiversity databases were developed (eg. what data was used, what criteria was used, what level of expert input was involved?). This information must be made publicly available to ensure transparency.

2. We are unclear about the processes that will be put in place to ensure the continued assessment and updating of the biodiversity databases. It is important that a systematic monitoring process be put in place to update the databases regularly based on the best available scientific information (see below).

3. We understand that the % cleared values in the **Vegetation Types Database** are not accurate in some cases. It is important that % cleared values are accurate, because this data is used to determine whether a development gets a **red flag**. Also, we are unclear about how vegetation types have been matched to TECs. This should be done in consultation with the NSW Scientific Committee.

4. We understand that the benchmark values in the **Vegetation Benchmarks Database** have been derived based on only limited data in some cases. It is important that the benchmark values are accurate because this data is used to determine **site value**, which is an important part of the calculation of biodiversity credits.

5. The **Threatened Species Profile Database** (**TSPD**) contains a considerable amount of threshold and other data such as the **minimum vegetation condition**, **surrounding vegetation cover**, **patch size** and **TG value**. It is important that this data is accurate because it is used to determine what threatened species require assessment at a site and how a threatened species will respond to management actions.

7. Assessing biodiversity values and predicting impacts

7.1 Use of vegetation condition benchmarks

The assessment methodology uses vegetation **condition benchmarks** in determining the biodiversity values of a site.

[4] Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.
[5] Pressey, R. et al. (2003) 'Formulating conservation targets for biodiversity patterns and process in the Cape Floristic Region, South Africa' *Biological Conservation* 112: 99-127.

The validity of assessing biodiversity values against benchmarks has been questioned by a number of scientists. In summary, the main concerns are:[6]

1. Natural ecosystems are dynamic and not static and may never move consistently towards a prescribed end-point state. There is no scientific logic in choosing one state over another as the desired end-point.

2. The use of benchmarks implies that optimal habitat conditions are obtained a long time after disturbance, which is not necessarily true. For many vegetation types, a variety of age classes are likely to provide optimal habitat.

This raises the following issues:

1. How does the assessment methodology account for the importance of disturbance regimes in determining biodiversity values?

2. Can the assessment methodology be applied to sites that have been recently disturbed (ie. by fire, etc)?

3. It is difficult to identify benchmarks objectively. How adequate is the benchmark data contained in the **Vegetation Benchmarks Database**?

7.2 Assessing threatened species based on a habitat assessment approach

The assessment methodology largely assesses threatened species based on a habitat assessment approach to threatened species assessment – **ecosystem credit species** are assessed based on habitat surrogates (**vegetation types**) and many **species credit species** are assessed based on **area of habitat**.

The main disadvantage of a habitat assessment approach is that it does not require consideration of population sizes or viability, which means that habitat supporting a large and viable population can be offset with habitat supporting a small and unviable population or no population (ie. by a site containing potential habitat only).

Under the assessment methodology, this situation applies to both ecosystem credit species and species credit species, including those species credit species that are measured by **number of individuals**. In theory, a development that impacts 50 individuals of a species credit species can be offset at biobank sites containing only 1 individual, although a large number of biobank sites would be required in such cases.

7.3 Potential habitat for species credit species

The assessment methodology does not assess potential habitat for **species credit species** in cases where the occurrence of a species at a site is discounted by undertaking a **threatened species survey** or an **expert report** (potential habitat for **ecosystem credit species** is assessed using habitat surrogates (**vegetation types**)).

[6] McCarthy M. et al (2004) 'The habitat hectares approach to vegetation assessment: an evaluation and suggestions for improvement' *Ecological Management and Restoration* 5: 24-27; Chapman M. and Underwood A. (2000) 'The need for a practical scientific protocol to measure successful restoration' *Wetlands (Australia)* 19(1): 28-45; Bekessy, S. et al. (in press) 'The biodiversity bank cannot be a lending bank'.

It is important to assess potential habitat because threatened species are often difficult to detect, a site may be used by a species only periodically or occasionally, and a site may provide important future habitat for a species even if it does not currently use the site. We note that the definition of habitat under the TSC Act is 'an area or areas occupied, or periodically or occasionally occupied, by a species…'.

7.4 Survey methodology and effort to detect species credit species

The assessment methodology allows the occurrence of a **species credit species** at a site to be discounted by undertaking a **threatened species survey** or an **expert report** in accordance with the **Operations Manual**. If a species is discounted from a development site, no biodiversity credits are required to offset impacts.

We are concerned that inadequate survey methodology and effort may result in falsely discounting the occurrence of a species credit species at a site. The Operations Manual should involve expert consideration of what survey effort is adequate in terms of the application of the assessment methodology.

We understand a PhD thesis is currently being undertaken on this issue in relation to flora under the supervision of staff from the RMIT University and the University of Melbourne, which is likely to be relevant to the assessment methodology.

7.5 Expert reports

The assessment methodology allows an **expert report** to be prepared in place of a **threatened species survey** in many circumstances to discount the presence of a threatened species at a site.

Our main concerns are:

1. We are unclear about the level of assessment required for an expert report. We are concerned that an expert report leaves significant room for subjective judgment on the likely presence of a threatened species at a site and that the level of assessment required may not be adequate to ensure a reasonable level of certainty in discounting the presence of a species at a site.

2. The assessment methodology requires an expert report to provide an estimate of the number of individuals to be impacted at a site if a **species credit species** is predicted to occur. It allows an estimate to be made without a threatened species survey based on the density of individuals in nearby populations. We are concerned about this approach because it is very difficult to make such an estimate with a reasonable level of certainty.

7.6 Indirect impacts

The assessment methodology does not assess indirect impacts of a development on the biodiversity values of adjacent vegetation or provide clear guidance on how indirect impacts may be assessed under the methodology. Indirect impacts may be significant component of the total impacts of a development. Examples of indirect impacts not clearly addressed in the methodology include edge effects, habitat degradation due to

urban runoff, a new road that causes road kill, or a linear development that divides a large patch into two smaller patches.

7.7 Predicting the benefits of management actions

The assessment methodology uses management actions to offset the impacts of a development, which are predicted to improve biodiversity values at a biobank site.

Our main concerns are:

1. There is very little available data that quantifies the benefits of management actions. We are concerned that the predicted gains in biodiversity values due to management actions may not be equivalent to the loss of biodiversity values due to the impacts of a development.

2. We are unclear about the monitoring that will be undertaken to confirm the predicted benefits of management actions. A systematic independent monitoring program must be implemented to test key predictions/assumptions in the assessment methodology (see below).

7.8 Users of the assessment methodology

The assessment methodology involves some subjective judgments. We are concerned that different users of the methodology will obtain different results in terms of determining the biodiversity values at a site and that a training/accreditation program may not be enough to adequately address this issue.

We support a monitoring program to assess the results obtained by different users of the assessment methodology with the aim of understanding the implications in terms of determining biodiversity values and accounting for this in the methodology to ensure it gives conservative results.

We understand a PhD thesis is currently being undertaken on this issue, under the supervision of staff from the University of Melbourne and DECC, which is likely to be relevant to the assessment methodology.

8. Offsetting rules

8.1 The location of a biobank site relative to a development site

The assessment methodology has offsetting rules that determine where a biobank site(s) can be located relative to the development site. The two key factors determining this are the distributions of the threatened species and the scarcity of the vegetation types to be impacted at the development site.

Our main concerns are:

1. The assessment methodology does not adequately address the conservation of genetic diversity and it does not require the impacts of a development to be offset within an appropriate bioregional scale (eg. a CMA or an IBRA bioregion). For example, the methodology may allow impacts on a threatened species

occurring at one end of its range to be offset by improvements to the same threatened species occurring at the other end of its range.

2. The assessment methodology treats **ecosystem credit species** and **species credit species** differently, which is not an ecologically valid approach. The location of biobank site(s) to offset the impacts on a **species credit species** is limited only by where that species is known to occur. However, the location of biobank site(s) to offset the impacts on an ecosystem credit species is often limited to a much greater extent by a number of other factors.

8.2 The long-term viability of a biobank site

The assessment methodology does not require consideration of the long-term viability of a biobank site. For example, a site does not need to meet any minimum **vegetation condition** or **surrounding vegetation cover** to be eligible as a biobank site.

We are concerned that this may mean the predicted gains in biodiversity values will not be achieved in perpetuity. For example, it is likely that the lower the condition of a site the higher is the risk that it will not respond well to management actions. Also, the approach is inconsistent because long-term viability is considered at the development site. We note that s 127B(3) of the TSC Act provides that the Minister must have regard to the long-term viability of a biobank site in developing the assessment methodology.

8.3 Incentives to offset within certain locations

The assessment methodology does not contain any mechanism to facilitate the location of biobank sites in a strategic way to ensure offsetting achieves the best possible biodiversity outcomes. For example, locating biobank sites strategically to increase the size of vegetation patches, or create or improve habitat corridors and 'stepping stones', or create buffers around sensitive areas, would make a greater contribution to the protection of biodiversity at a landscape scale.[7]

9. Monitoring

A systematic independent monitoring program undertaken by appropriately qualified ecologists must be implemented to test the key predictions/assumptions in the assessment methodology. This is particularly important because it is unlikely that such predictions/assumptions will be adequately tested merely by operating the methodology. For example, in most cases a consultant applying the methodology will not know whether the methodology has accurately predicted the presence of a threatened species at a site.

Key aspects of the assessment methodology that must be monitored include:

1. The predictability of **ecosystem credit species** based on habitat surrogates (**vegetation types**).

[7] Fischer, J. et al. (2006) 'Biodiversity, ecosystem function, and resilience: ten guiding principles for commodity production landscapes' *Front Ecol Environ* 4(2): 80-86.

2. The predictability of **species credit species** based on **habitat features** and **geographic attributes**.

3. The response of **site value** to management actions.

4. The response of threatened species to management actions.