BioBanking Scheme: Statutory Review Report

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Summary

The New South Wales Biodiversity Banking and Offsets Scheme (BioBanking) is a voluntary, market-based scheme designed to help conserve biodiversity and streamline the biodiversity assessment process for development. BioBanking commenced in July 2008 and is established under Part 7A of the *Threatened Species Conservation Act 1995* (TSC Act). Operation of the scheme is supported by the *BioBanking Assessment Methodology* (BBAM). The TSC Act and associated Regulation require a review of the operation of BioBanking and the BBAM. The Office of Environment and Heritage (OEH) commenced the review on 10 May 2012 and undertook public consultation in accordance with legislative requirements.

This report outlines the key findings of the review and provides recommendations for improving the operation of BioBanking to ensure it achieves credible environmental outcomes and is practical to use. It also recommends replacing the existing BBAM with a revised methodology that addresses the issues raised during the course of the review. The revised BBAM has been developed alongside the Framework for Biodiversity Assessment (FBA), which is the methodology that underpins the Biodiversity Offsets Policy for Major Projects.

The Biodiversity Offsets Policy was developed to clarify, standardise and improve biodiversity offsetting for major project approvals in the NSW planning system. It incorporates the elements of BioBanking that were identified as strengths of the scheme during the review and addresses many of the concerns that relate to major projects. The FBA is closely aligned with the proposed revised BBAM. The gain in biodiversity at an offset site will be calculated in the same way under both BioBanking and the Offsets Policy. The FBA will direct proponents to use the BBAM to calculate biodiversity gain at an offset site. This will ensure landholders who enter into biobanking agreements can participate in both the Offsets Policy and BioBanking.

The review does not make any recommendations that require legislative amendments. This is because the NSW Government has committed to a comprehensive review of the legislative and policy framework for the management of native vegetation, threatened species and other protected native animals and plants. On 18 June 2014, the Minister for the Environment appointed an independent panel to undertake the review. As BioBanking forms part of the legislative and policy settings for threatened species management, this review report and its recommendations will be considered by the panel as part of the biodiversity legislation review.

Many stakeholders recognised the scheme's strengths to be that it provides:

- a standardised, consistent, scientific approach to measuring biodiversity impacts at development sites and biodiversity gains at offset sites
- protection of offset sites in perpetuity
- the ability for landowners to receive payments for managing their land for conservation.

The review also highlighted some of the limitations of BioBanking. Some stakeholders noted that the time taken to review and process biobanking statements and agreements can be a barrier to participation. Landowners identified that the high cost of assessing a biobank site and a lack of certainty that credits created can be sold may be a disincentive to participation. Development proponents and ecological consultants noted further limitations of the scheme, such as the uncertainty of offset supply, the inflexibility of some elements of the scheme, the uncertainty around red flag decisions and the expectation of higher transaction costs compared to the alternative assessment and offsetting pathways.

The review report synthesises the feedback received during the course of the review and identifies outcomes and improvements for the environment, landowners, developers, local

government and OEH's systems and processes if the recommendations in this report are accepted and carried out. These are summarised below.

Environmental outcomes

- Enhanced protection of environmentally sensitive areas including riparian areas of streams and rivers, SEPP 14 wetlands and estuarine areas.
- Protection of any identified State or regionally significant biodiversity links.
- Delivery of a monitoring and evaluation program to determine the biodiversity gains achieved at biobank sites. This will allow informed adaptive management of the management actions undertaken at biobank sites.
- The strategic location of biobank sites will be assessed.
- There will be increased emphasis and guidance on reasonable steps that need to be taken to first avoid then minimise the impacts on biodiversity from a development before moving to offsets. This is in line with the 'avoid, minimise, offset' hierarchy.
- An increased number of offset sites secured and managed in perpetuity as a result of an expected increase in participation in the scheme.

Improving landowner participation and empowering landowners

- During the development of the Biodiversity Offsets Fund, which will support the Biodiversity Offsets Policy for Major Projects, consideration will be given to ways in which the fund can assist landowners to overcome barriers to participation, such as the high costs for site assessments coupled with the uncertainty of finding a credit buyer.
- OEH is working on providing clear and simple guidance on the costing of management actions that need to be undertaken at a biobank site. This is to help landowners appropriately cost these actions and therefore set a price for their biodiversity credits.

Improving developer participation

- In recognition of developer concerns around offset supply OEH is:
  - enabling developers to set up biobanking agreements on land they already own for the purposes of offsetting
  - increasing the flexibility in credit trading rules.
- OEH is also improving the functionality of the BioBanking public register so it can better assist developers in finding landowners who have the credits they need to offset the impacts of their development.

Improving BioBanking for local government

- Guidance on the level of credit discounting that should be applied to council land proposed as a biobank site will be clearer.
- As part of the development of the Biodiversity Offsets Fund, the role of local government in identifying strategic locations for biobank sites will be considered. This may assist in addressing concerns that local government investment priorities are not considered.

Improving OEH systems, processes and customer service

- In recognition of the importance for proponents and landholders of certainty in the timeframes for reviewing and approving biobanking agreements and statements, OEH will develop a realistic service guarantee for the delivery of these services. This will be developed after the business systems review that OEH has commissioned is finalised.

List of recommendations

Scheme framework

A1. Achieve consistency in methods for assessing the impacts of development on biodiversity, where possible.

A2. Reduce state-federal duplication and inconsistency in environmental approvals through the development of a bilateral agreement with the Commonwealth Government.

A3. Develop and implement a scheme-wide program for monitoring and evaluation of biobank sites to determine whether management actions are achieving predicted gains across a range of ecological contexts.

A4. Develop a service guarantee for delivery of biobanking agreements and statements taking into account the findings of the OEH business processes review.

A5. Provide flexibility for proponent-owned and managed biobank sites and develop clear operational guidance for their use.

A6. As part of the development of the Biodiversity Offsets Fund:

- consider extending the fund to proponents who participate in BioBanking (A6a)
- investigate how the fund can assist with information provision to landowners regarding types of sites that are in demand and what assistance can be provided to landowners for establishing biobank sites (A6b)
- increase extension and advocacy to landowners, particularly farmers, to ensure they have access to clear and accurate information on BioBanking (A6c)
- Consider future engagement with strategic land use and mapping processes and the role of Local Government and Local Land Services in identifying strategic locations for biobank sites (A6d).

A7. Update the accreditation criteria to incorporate stronger requirements for flora survey experience.

A8. Develop standard guidance on costing management actions based on operational experience in BioBanking and experience with other conservation agreements and management of national parks.

A9. Provide information to landowners around the flexibility provided by biobanking agreements in the event annual management payments are not sufficient to fund the agreed management actions.

A10. Revise the guidelines for calculating additionality on public land to provide further clarity on determining the level of credit discounting.

A11. Retain the fit and proper person test.

A12. Undertake regular reviews of the BioBanking Trust Fund investment strategy.

BioBanking Assessment Methodology (BBAM)

A13. Replace the existing BBAM with a revised methodology entitled the *BioBanking Assessment Methodology 2014* (BBAM 2014).

A14. Consider amending the BioBanking regulation to allow the Minister to approve a minor variation in the application of the methodology in a limited set of circumstances and develop a set of clear rules and operational guidance to support the use of this

provision. This may be considered in the context of the broader biodiversity legislative review or may proceed separately.

A15. Consider other criteria that may be used to further identify the strategic location of biobank sites.

A16. Develop a spatial viewer that identifies the strategic locations of biobank sites and investment in biodiversity.

A17. Investigate the feasibility of including a provision that assigns a class for the number of hollow bearing trees in a vegetation zone according to the benchmark for the Plant Community Type based on the site attribute score.

A18. Develop threatened species survey guidelines for flora, bats and other relevant species.

A19. Investigate the feasibility of amending the offset rules and credit profile to ensure that the loss of hollow bearing trees impacted by development is contained on a biobank site.

A20. Undertake a structured program to improve supporting biodiversity datasets, and commit to regular maintenance.

A21. Deliver improved functionality of the BioBanking Credit Calculator.

The revised *BioBanking Assessment Methodology 2014* will:

B1. Provide for the assessment of landscape features at a development site and a biobank site to:

- assess the impact of connectivity within the outer assessment circle
- add an additional category for assessing patch size to allow for 'very large' patches of remnant vegetation
- allow for a single outer and inner assessment circle that can be scaled according to the size of the proposal
- assess the amount of native vegetation cover within the inner and outer assessment circle in 5% increments
- provide specific criteria for assessing developments that are linear shaped, including assessing the impact that the development has on the patch area to perimeter ratio
- provide further categories to assess connectivity at development or offset sites, including whether they form part of a state significant, or regionally significant, biodiversity link (section 4.2).

B2. Include a provision that assesses the strategic location of an offset site in considering its landscape value and align this provision to streamline the assessment of connectivity (section 4.2.6).

B3. Provide a more rigorous and quantitative method for assessing, identifying and mapping Plant Community Types (PCTs) at development and biobank sites (section 5.2.1).

B4. Provide greater clarity about the relationship between PCTs and Biometric Vegetation Types and require BBAM assessments to specify PCTs to avoid confusion (section 5.2.1).

B5. Use vegetation zones as the map unit for predicting threatened species at development and biobank sites and delete threatened species subzones from the methodology (section 5.2.2).

B6. Remove the attribute, 'patch size including low condition vegetation' from the filters to predict threatened species from the methodology (previously section 3.2).

B7. Include an optional step for assessing whether all of the habitat components used by a threatened species that require ecosystem credits are present on development and biobank sites (sections 6.3.1.6 – 6.3.1.9).

B8. Provide a more rigorous assessment requirement to establish and assess the list of candidate species that require assessment by targeted survey or expert report at a development or biobank site (section 6.5).

B9. Delete the provision that allows the Chief Executive to develop an Identified Populations database (previously section 3.6).

B10. Include specific guidance for demonstrating that a development has undertaken reasonable measures to avoid and minimise the impact of development on biodiversity (section 8.3).

B11. Include the following features in the definition of 'red flag areas':

- riparian buffer zones bordering 4th order or greater streams and rivers, important wetlands and estuarine areas
- state or regionally significant biodiversity links
- land that the Minister for Environment has declared as critical habitat in accordance with section 47 of the TSC Act and which is listed on the Register of Critical Habitat in NSW
- a threatened species or population found on a development site that has not previously been recorded in the IBRA subregion, according to records in the Atlas of NSW Wildlife (section 9.2.2).

B12. Include a more robust condition threshold based on the site value score (≤ 34) for determining when a red flag variation report is required (section 9.2.2).

B13. Provide a consistent approach in the method used to define a 4-hectare area of highly cleared vegetation type (section 9.2.3.3).

B14. Provide a clear expression of the intent of the red flag variation criteria (section 9.2).

B15. Use the overall site value score for a vegetation zone as the measure of habitat quality (Equation 1), rather than the habitat value of individual site attributes for a threatened species (section 10.4).

B16. Delete the equation used to calculate the habitat value based on individual site attributes (previously Equation 9).

B17. Assign the 'threatened species response to gain value' (Tg value) as a threatened species offset multiplier when calculating the offset requirement for impacts on threatened species and endangered/critically endangered communities (Appendix 1, equations 5 and 6).

B18. Replace the 10% bonus for past good management with a provision to assess the 'averted loss' in vegetation condition should a biobanking agreement not be established at a potential biobank site (section 12.3).

B19. Amend the credit profile and offset rules to remove the attributes for surrounding vegetation cover and patch size (sections 10.4.5 and 10.6).

B20. Amend the offset rules to allow matching the location of a biobank site within any of the IBRA subregions neighbouring the development site (section 10.4.5).

B21. Amend the offset rules to allow matching the ecosystem credits required for a PCT with any PCT within the same vegetation class that has an equal or greater percent cleared value in the major catchment area (section 10.4.5).

Acronyms

BBAM	BioBanking Assessment Methodology
BCAM	Biodiversity Certification Assessment Methodology
BTF	Biodiversity Trust Fund
BVT	Biometric vegetation type
CPI	Consumer Price Index
EEC	Endangered ecological community
EOAM	Environmental Outcomes Assessment Methodology
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FBA	Framework for Biodiversity Assessment
IBRA	Interim Biogeographic Regionalisation for Australia
OEH	Office of Environment and Heritage
PCT	Plant community type
TSC Act	*Threatened Species Conservation Act 1995*
TSPD	Threatened Species Profile Database
VIS	Vegetation Information System

1. Introduction

The New South Wales Biodiversity Banking and Offsets Scheme (BioBanking) is a voluntary, market-based scheme designed to help conserve biodiversity and streamline the biodiversity assessment process for development. It provides an opportunity for landowners to receive payments for managing their land for conservation and establishes a market for the delivery of biodiversity services. BioBanking commenced in July 2008 and is established under Part 7A of the *Threatened Species Conservation Act 1995* (TSC Act). Operation of the scheme is supported by the *BioBanking Assessment Methodology* (BBAM).

The TSC Act and associated *Threatened Species (Biodiversity Banking) Regulation 2008* (BioBanking regulation) require a review of the operation of BioBanking and the BBAM as soon as possible after two years from the date of gazettal of the BBAM (s 127ZZN TSC Act). Participation rates two years after commencement did not provide enough information to allow a meaningful review to be conducted at that time. For this reason, the review commenced on 10 May 2012 when participation rates had increased and data from a number of biobank sites and development proponents was available.

This TSC Act requires this report to be tabled in each House of Parliament and the Regulation provides for the Minister to amend, repeal or replace the BBAM after considering the report.

1.1 Purpose of report and scope of the review

This report outlines the key findings of the review and provides recommendations for improving the operation of BioBanking to ensure it achieves credible environmental outcomes and is practical to use. The report includes a discussion of the proposed changes to the BBAM that will be gazetted to replace the existing methodology.

The scope of the review includes the:

- performance and cost effectiveness of BioBanking
- extent to which the scheme is achieving its goal of maintaining or improving biodiversity conservation
- operation and use of the BBAM and its relationship with similar methodologies
- scheme framework including matters associated with biobanking agreements, statements and transactions, the BioBanking Trust Fund and assessor accreditation.

This report identifies actions that are already underway to address identified issues and makes recommendations for future actions.

1.2 Review process

The BioBanking review commenced on 10 May 2012 with the public release of an information package on the Office of Environment and Heritage (OEH) website. The package included:

- BioBanking review: A summary of themes and issues (www.environment.nsw.gov.au\resources\biobanking\20120061bbrevsum.pdf)
- BioBanking review: Discussion paper (www.environment.nsw.gov.au/resources/biobanking/20120062bbrevdp.pdf)
- Revised BioBanking Assessment Methodology (BBAM) (www.environment.nsw.gov.au/resources/biobanking/20120029drftbbassessmeth.pdf).

A formal consultation period of eight weeks enabled the public to comment on the scheme and the BBAM. Fifty written submissions were received. An online consultation forum was

available during this period. Notices were placed in the *Sydney Morning Herald*, *Daily Telegraph*, *The Land*, *The Newcastle Herald* and the *Illawarra Mercury* seeking public input.

During the consultation period, OEH conducted workshops with key stakeholders, such as Urban Development Institute of Australia, the Property Council of Australia, the NSW Minerals Council, accredited BioBanking Assessors, the Environmental Defenders Office, the Local Government and Shires Associations (now Local Government NSW), Catchment Management Authorities (now Local Land Services), and the Australian Government Department of Sustainability, Environment, Water, Population and Communities (now Department of the Environment).

Information gathered during these meetings was used to clarify and supplement the stakeholders' written submissions. Landowners and proponents who have participated in BioBanking were surveyed in July and August 2012 on their experiences with the program.

On 20 March 2014, OEH released the report 'BioBanking review: Summary of submissions'[1] and published submissions on the OEH website. The report presented the issues raised in the written submissions as well as key messages received from stakeholders throughout the consultation period. The delay between the conclusion of the public consultation period and the release of the summary of submissions report is largely a result of the decision to align the delivery of the BioBanking review with the development of the Biodiversity Offsets Policy for Major Projects. The relationship between these two programs is outlined in the next section.

1.3 BioBanking and other reforms and policies

1.3.1 NSW Biodiversity Offsets Policy

The NSW Biodiversity Offsets Policy for Major Projects (Offsets Policy) was developed to clarify, standardise and improve biodiversity offsetting for major project[2] approvals under the NSW planning system.

The Offsets Policy was developed alongside the review of BioBanking. As such, the Offsets Policy incorporates the elements of BioBanking that were identified as strengths of the scheme, and addresses many issues raised by stakeholders that are related to major projects.

The Offsets Policy is underpinned by the Framework for Biodiversity Assessment (FBA), which contains the methodology for assessing development sites and calculating the offset requirement. This methodology is closely aligned with the proposed revised BBAM. The gain in biodiversity at an offset site will be calculated in the same way under both BioBanking and the Offsets Policy, as the FBA will direct proponents to the BBAM to calculate biodiversity gain at an offset site. This will ensure landholders who enter into biobanking agreements can participate in both the Offsets Policy and BioBanking.

Another key element of the Offsets Policy that relates to the BioBanking scheme is the proposed Biodiversity Offsets Fund (Offsets Fund).The Offsets Fund will allow major project proponents to make a financial contribution to fulfil their offset requirement. A fund program manager will undertake the task of locating offsets for major projects using biobanking agreements to secure the land. The Offsets Fund is proposed to be developed over the next 18 months.

[1] See: www.environment.nsw.gov.au/biobanking/130187bbsumsub.htm
[2] 'Major projects' are state significant development and state significant infrastructure as defined under the *Environmental Planning and Assessment Act 1979.*

1.3.2 NSW biodiversity legislation review

The NSW Government has committed to a comprehensive review of the legislative and policy framework for the management of native vegetation, threatened species and other protected native animals and plants in NSW. The Minister for the Environment has appointed an independent panel to undertake this review[3]. The Independent Review Panel will consider the policy settings, programs and funding arrangements that support the management of biodiversity, threatened species and native vegetation in NSW.

The scope of the review will include the *Native Vegetation Act 2003*, *Threatened Species Conservation Act 1995*, *Nature Conservation Trust Act 2001* and parts of the *National Parks and Wildlife Act 1974*[4]. It will include all associated regulations and policies.

As BioBanking forms part of the legislative and policy settings for threatened species management, the recommendations of the BioBanking review and how BioBanking sits within the current policy settings and programs for the management of biodiversity, threatened species and native vegetation will be considered as part of the NSW biodiversity legislation review.

[3] See: www.environment.nsw.gov.au/biodiversitylegislation/review.htm
[4] Terms of Reference are available at www.environment.nsw.gov.au/biodiversitylegislation/review.htm

2. How BioBanking works

BioBanking is a voluntary, market-based mechanism that gives development proponents up-front certainty about their biodiversity obligations, and offers landowners payments for creating offsets and undertaking conservation management actions on their own land. BioBanking provides an alternative assessment pathway to the assessment of significance and species impact statement requirements under the *Environmental Planning and Assessment Act* (EP&A Act). If a proponent assesses and offsets their development in accordance with BioBanking and obtains a biobanking statement, the consent authority does not need to further consider the impacts of the development on threatened species, populations or ecological communities and their habitat during the planning approval process.

2.1 Biobanking statements

Under BioBanking, a proponent is required to undertake an assessment of their development using the BBAM, established under section 127B of the TSC Act. The BBAM defines red flag areas that development must avoid unless a variation is obtained, requires the minimisation of impacts where possible, then quantifies any remaining loss in terms of biodiversity credits. These credits are identified as either ecosystem credits or species credits and matching credits are required to offset the loss of biodiversity (threatened species, populations, ecological communities, or habitats) from the impact of development. The use of BBAM allows proponents to be informed up front of the credits they need to secure as offsets to meet their environmental obligations.

Applications for biobanking statements are lodged with OEH. OEH assesses the application, then issues the statement where it is consistent with the BBAM. A statement specifies the on-site actions that must be carried out and the number and type of credits that must be retired before development commences.

2.2 Creation of credits (biobanking agreements)

BioBanking offers landowners the potential to create a revenue stream by protecting and enhancing biodiversity values on their land. Landowners are required to apply the BBAM to an agreed portion of their land to identify specific biodiversity values. Their agreement to secure this land and undertake management actions to improve biodiversity values results in the generation of a certain number of biodiversity credits. The landowner must have their assessment and management plan assessed by OEH in order to have a biobanking agreement registered. Once a biobanking agreement is registered, the landowner is able to sell and trade the biodiversity credits created.

2.3 Securing offsets and satisfying ‘improve or maintain’

Proponents can seek to create credits on their own land or purchase credits on the market in order to satisfy their environmental liabilities. Assessments at the development site and the biobank site are both undertaken using the BBAM, so by securing credits in the correct number and class, a proponent will meet the ‘improve or maintain’ standard.

3. Review findings: Scheme framework

3.1 Scheme as a whole

3.1.1 Strengths of BioBanking

The key strengths of BioBanking that have been identified throughout the review are based on the fundamental elements of the scheme. For example, many stakeholders recognised the scheme's strengths to be the provision of:

- a standardised, consistent, scientific approach to measuring biodiversity impacts at development sites and biodiversity gains at offset sites
- protection of offset sites in perpetuity
- the ability for landowners to receive payments for managing their land for conservation.

Ecological consultants noted that the BBAM is a 'rigorous, replicable and reliable scientific method for not only determining offset requirement, but also conducting threatened flora and fauna assessments'[5]. It is also seen to provide 'quicker, and therefore cheaper, assessment timeframes'[6]. This is because it provides increased certainty at the early stages of a development proposal.

Stakeholders recognised that biobanking agreements can be used to secure ecologically valuable sites and prevent them from degrading over time. Shoalhaven City Council noted that 'local councils are not well resourced to manage the vast natural areas under their care, control and management. The Scheme does afford some opportunity to obtain funding to manage these important community areas'[7].

The former Hawkesbury-Nepean Catchment Management Authority also noted 'some recent BioBanking sites in Western Sydney had high levels of woody weed infestation, in particular privet and African olive. These sites have a high investment risk due to the level of ongoing maintenance required to obtain acceptable long-term conservation outcomes. The BioBanking Trust Fund and reporting mechanism currently provides the most appropriate mechanism for continued maintenance of these sites. If the BioBanking scheme did not exist, these sites, which are often critically endangered ecological communities, would continue to degrade and eventually have little or no biodiversity value'[8].

Offsetting to compensate for impacts to biodiversity is a developing practice that is recognised under the Convention on Biological Diversity[9] as an important component of environmental impact assessment. It is internationally accepted as part of the mitigation hierarchy – to avoid, minimise and then offset. Despite the recognised benefits of biodiversity offsetting, some stakeholders questioned the legitimacy of offsetting as a mechanism to address impacts on biodiversity arguing that it does not meet a high enough standard of environmental protection.

BioBanking is consistent with offsetting principles identified in a report commissioned by the International Union for Conservation of Nature and International Council on Mining and Metals.[10] These principles include limiting offsetting through the use of red flags, applying

[5] Confidential submission from ecological consultants.
[6] Confidential submission from ecological consultants.
[7] Shoalhaven City Council submission to the BioBanking review. See: www.environment.nsw.gov.au/biobanking/bbsubmissions.htm
[8] Hawkesbury-Nepean Catchment Management Authority submission to BioBanking review. See: www.environment.nsw.gov.au/biobanking/bbsubmissions.htm
[9] See: www.cbd.int/
[10] http://cmsdata.iucn.org/downloads/icmm_biodiversity_offsets_rpt.pdf

additionality rules, establishing rules that require offsets to be equivalent to the biodiversity values being lost and ensuring the permanence of offsets.

3.1.2 Duplication and inconsistency

Submissions pointed out the inefficiencies in having a number of different biodiversity assessment methods in NSW. Methods other than BBAM that can be used to assess impacts on biodiversity include the:

- Environmental Outcomes Assessment Methodology under the *Native Vegetation Act 2003*
- seven-part test of significance under section 5A of the EP&A Act
- Biodiversity Certification Assessment Methodology under the TSC Act
- Framework for Biodiversity Assessment under the proposed Biodiversity Offsets Policy for Major Projects.

These methods have evolved over time as new biodiversity assessment needs have arisen or new policies developed. It is acknowledged, however, that it is confusing and inefficient to have many different methods for measuring biodiversity impacts. While it is noted that sometimes there is a need for different processes for different purposes, the NSW Government is committed to achieving consistency in biodiversity assessment and offsetting practices where possible. One of the actions in the NSW Government's agenda for change, *NSW 2021: A plan to make NSW number one*, is to 'Develop a common set of offsetting principles and align offsetting practices' (see Goal 4: Increase the competitiveness of doing business in NSW).

The biodiversity legislation review is considering options for addressing inconsistent assessment processes and offset practices and will consider the outcomes of the BioBanking review as part of this work. In the meantime, significant action has already been taken to achieve consistency where possible, including between the revised BBAM and FBA as outlined in section 1.3.1.

The NSW Government is also committed to finalising a bilateral agreement with the Commonwealth Government that will reduce duplication in environmental approvals for major projects. The effect of the agreement would be that, where a development proposal for a major project is likely to have a significant impact on a matter of national environmental significance, including Commonwealth-listed threatened species and communities, and the approval is undertaken in accordance with an accredited NSW legislative process, it is deemed to also be approved for the purposes of Commonwealth legislation. This will mean there will no longer be a need to apply the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* environmental offsets policy[11] alongside NSW processes.

Action underway:

The proposed revised BBAM and FBA have been developed concurrently to achieve consistency where possible.

Recommendations:

A1. Achieve consistency in methods for assessing the impacts of development on biodiversity, where possible.

A2. Reduce state-federal duplication and inconsistency in environmental approvals through the development of a bilateral agreement with the Commonwealth Government.

[11] See: www.environment.gov.au/resource/epbc-act-environmental-offsets-policy

3.2 Conservation outcomes

3.2.1 Conservation outcomes to date

In the six years that the program has been operating, almost 5000 hectares of native vegetation, including ecological communities, threatened species and their habitat has been set aside under biobanking agreements to be managed for conservation purposes in perpetuity[12].

The vegetation supports 15 different endangered and critically endangered ecological communities, including almost 300 hectares of the critically endangered Cumberland Plain Woodland and almost 1000 hectares of nationally listed Natural Temperate Grassland of the Southern Tablelands (NSW and ACT) endangered ecological community (Table 1).

The plant community types also provide habitat for a range of threatened fauna species, including the Spotted-tailed Quoll (*Dasyurus maculatus*), woodland birds such as the Regent Honeyeater (*Xanthomyza phrygia*) and the Swift Parrot (*Lathamus discolour*), and native bats such as the Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*) and the Little Bentwing-bat (*Miniopterus australis*). Targeted species surveys on biobank sites have identified habitat for ten different flora species, as well as threatened fauna such as Rosenbergs Goanna (*Varanus rosenbergi*) and the Red-crowned toadlet (*Pseudophryne australis*) (Table 2).

Table 1: Total area of vegetation formations and endangered ecological communities covered by biobanking agreements (as at 15 August 2014)

Vegetation formation	Area of formation (ha)	Endangered ecological community	Area of EEC (ha)
Dry sclerophyll (shrub/grass sub-formation)	1,184	Hunter Lowland Red Gum Forest in the Sydney Basin and NSW North Coast Bioregions	26
		Shale/Sandstone Transition Forest	180
		Sydney Turpentine-Ironbark Forest	16
Dry sclerophyll forests (shrubby sub-formation)	1,152	Nil	0
Grassy woodlands	856	Cumberland Plain Woodland	294
		Moist Shale Woodland in the Sydney Basin Bioregion	2
		River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	56
		White Box Yellow Box Blakely's Red Gum Woodland	351
		Tablelands Snow Gum, Black Sallee, Candlebark and Ribbon Gum Grassy Woodland in the South Eastern Highlands, Sydney Basin, South East Corner and NSW South Western Slopes Bioregions	109
Grasslands	969	Natural Temperate Grassland of the Southern Tablelands (NSW and ACT)	969
Heathlands	3	Nil	0

[12] As at June 2014.

Vegetation formation	Area of formation (ha)	Endangered ecological community	Area of EEC (ha)
Forested wetlands	87	Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions; and Maroota Sands Swamp Forest.	71
Freshwater wetlands	3	Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	3
Rainforests	208	Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	177
		Western Sydney Dry Rainforest	2
Saline wetlands	66	Coastal saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions	16
Wet sclerophyll (grassy)	125	Nil	0
Wet sclerophyll forest (shrubby sub-formation)	74	Nil	0
Total	**4,728**		**2,272**

Table 2: Threatened species for which species credits were created on biobank sites (as at 15 August 2014)

Common name	Scientific name
Netted bottlebrush	*Callistemon linearifolius*
Black-eyed susan	*Tetratheca juncea*
Doubletail buttercup	*Diuris aequalis*
Rosenberg's goanna	*Varanus rosenbergi*
Red-crowned toadlet	*Pseudophryne australis*
Epacris purpurascens var. purpurascens	*Epacris purpurascens* var*. purpurascens*
Teratheca glandulosa	*Teratheca glandulosa*
Pimelea curviflors var. curviflora	*Pimelea curviflors* var*. curviflora*
Lasiopetalum joyaceae	*Lasiopetalum joyaceae*
Hibbertia superans	*Hibbertia superans*
Darwinia biflora	*Darwinia biflora*
Grove's paperbark	*Melaleuca groveana*

Annual reports for some of the earliest established biobank sites have recorded considerable improvements to biodiversity from undertaking management actions at the sites. A case study of the St Mary's Tower biobank site demonstrates these improvements.

Case study: Biodiversity improvements at St Mary's Tower biobank site

The 80-hectare St Mary's Tower biobank site was established in October 2010. OEH has received four annual reports which have documented the biodiversity improvements from the management activities that have taken place at the site, including the discovery of two threatened flora species. Management actions, funded by annual payments, include weed control activities undertaken across the site, particularly in areas that contain the critically endangered Cumberland Plain Woodland.

Some areas of the site contained Cumberland Plain Woodland in poor condition, with little tree cover, no shrubs and groundcover that contained a mix of native and exotic grass species. Exotic grasses included whiskey grass, pigeon grass and the noxious weed serrated tussock.

As a result of weed control activities over the past three years, serrated tussock appears to have been eradicated. Other exotic species including pigeon grass, fireweed, paspalum and paddy lucence have been reduced to less than 10%. Whiskey grass is still common at the site.

The annual reports also document the impressive regeneration of native plant species that will ultimately increase the tree cover in this area. In the second year, regenerating Eucalypt species were observed at densities of one tree every square metre and by the third year, the regenerating Eucalypts had grown to around three metres in height.

The annual monitoring has also documented the discovery of threatened flora species on the site. An estimated population of 400 individuals of the threatened *Epacris purpurascens* var. *purpurascens* was identified within the Cumberland Shale Sandstone Transition Forest during the 2010–2011 reporting period. The following year, a smaller population of 45 individuals was identified during a half yearly monitoring sweep of the property. Four individuals of the threatened shrub, Bargo Geebung (*Persoonia bargoensis*) have also been found on the biobank site since it was established.

3.2.2 Monitoring and evaluation

Biobank site owners are required to track and monitor their performance through record keeping, documentation and reporting of results to OEH for review and assessment. Annual reports are the key method for landholders to report to OEH on management actions undertaken and any observed biodiversity improvements on the biobank site, including photos taken from permanent photo points.

While this kind of monitoring and reporting is useful, OEH recognises the need for a scheme-wide monitoring and evaluation program that would evaluate the effectiveness of management actions across a range of ecological contexts, including between different biobank sites. This would allow effective assessment of whether management actions are achieving their predicted gains and whether different or additional actions are required for different types of ecosystems. This would in turn allow for informed adaptive development of BioBanking tools and management plans. Some submissions to the review called for a formal monitoring and evaluation framework of this nature so that conservation outcomes predicted to occur using the BBAM could be validated.

Recommendation:

A3. Develop and implement a scheme-wide program for monitoring and evaluation of biobank sites to determine whether management actions are achieving predicted gains across a range of ecological contexts.

3.3 Administrative and approval processes

3.3.1 Review and approval timeframes

Some stakeholders raised concerns around the time taken to review and process biobanking statements and agreements. Some delays have been due to the relative infancy of the

scheme and the quality and completeness of information submitted to OEH. These issues are likely to be resolved as the scheme evolves and the collective experience of both OEH and ecological consultants is increased. It is acknowledged, however, that for this scheme to be successful, it needs to be adequately resourced and operating as efficiently as possible.

OEH has therefore commissioned an independent review to identify inefficiencies in the current application process, consider the distribution of management responsibilities for the scheme across OEH, and strengthen the customer focus of the program. Following delivery of the business processes review, actions will be undertaken to improve review and approval timeframes. This will include the development of a realistic service guarantee for biobanking agreements and statements. The service guarantee will set out expected timeframes for the review and approval of biobanking agreements and statements, along with the standards that applications will need to meet in order for these timeframes to be achieved.

Action underway:

OEH has commissioned an independent review of BioBanking business processes to identify opportunities to improve the efficiency of the application process and strengthen the customer focus of the scheme.

Recommendation:

A4. Develop a service guarantee for delivery of biobanking agreements and statements taking into account the findings of the OEH business processes review.

3.3.2 Consultation and public participation

When a biobanking statement is issued and submitted with a development proposal, the consent authority is required to follow public notification and consultation processes under the EP&A Act. There is therefore an opportunity for the public to make submissions on the development proposal. It is important to note that the issuing of a biobanking statement is not an approval for the development to proceed. Rather, a biobanking statement, including the purchase and retirement of the credits it requires, satisfies the test that the development is not likely to have a significant impact on threatened species, populations, ecological communities or their habitat. It is ultimately the relevant consent authority's decision as to whether the development proceeds. It will make this decision considering public submissions, including those related to social and economic impacts of a proposal.

Local Government NSW sought a legislative requirement for local government consultation during the biobanking statement approval process. Existing practice requires OEH to notify the relevant local council when an application for a biobanking statement or agreement is received and to consult with council on a draft copy of the biobanking statement. This provides local government with the opportunity to liaise with OEH during the preparation of a biobanking statement.

It is considered that current processes adequately provide for both local government involvement in issuing biobanking statements and for the broader community's input to development proposals that include a biobanking statement.

3.4 Market operation and conditions

3.4.1 Scheme activity

Since the review commenced in 2012, participation rates by both proponents and landowners have steadily increased. As at end July 2014, the number of completed biobanking agreements has grown from nine to 29 with another 14 agreements at different stages of the approval process. Ten biobanking statements have been issued with another two under review. The status of the scheme as at end July 2014 can be summarised as follows:

- Twenty nine agreements approved, conserving over 4700 hectares of native vegetation and threatened species in perpetuity.
- Ten biobanking statements issued for urban development covering approximately 53 hectares.
- Over 10,000 ecosystem credits and over 2,000 species credits have been transferred or retired.
- Ecosystem credit prices have ranged from $1,100 to $15,000 per credit excluding GST and species credit prices have ranged from $1 to $5,691 per credit excluding GST.
- Over $31 million has been deposited into the Biobanking Trust Fund.
- Over $3 million in management payments has been paid out to landowners from the Biobanking Trust Fund.
- One hundred landowners have formally expressed an interest in establishing a biobanking agreement, with the areas nominated totalling almost 45,000 hectares.
- Over 150 people have been trained and accredited as biobanking assessors.

3.4.2 Disincentives to participation – development proponents

Development proponents and ecological consultants provided feedback that there were a variety of factors acting as disincentives to participation in BioBanking, including:

- the uncertainty of offset supply
- inflexibility of some parts of BioBanking, including credit trading rules, particularly for major projects
- uncertainty around red flag decisions
- an expectation of higher transaction costs compared to the alternative assessment and offsetting pathway.

Some ecological consultants and environment groups commented that the voluntary nature of the scheme influenced levels of participation. Some stakeholders suggested BioBanking should be made mandatory.

3.4.2.1 Offset supply

The uncertainty of offset supply, or credit availability, has proved to be a disincentive with some proponents. As stated previously, offset supply is increasing as BioBanking becomes more established and 29 agreements are now in place. It is acknowledged, however, that sometimes appropriate credits are not available on the market. In some instances, proponents already own land that would be an appropriate offset and have the capacity to manage this land themselves. Given this, introducing further flexibility into the scheme is considered appropriate to allow proponents to set up biobanking agreements on their own land.

Work has commenced to develop guidance for proponents in these circumstances so that they can undertake management actions on their own land using their own funds. This means that proponents will not need to put money for management actions in the Biobanking Trust Fund upfront. Proponents will, however, need to deposit funds for ongoing management of the site at some point, as the land may eventually be sold and future landowners will need to have adequate support for ongoing management.

The guidance to support proponent-owned biobank sites will include:

- when the payment of money for future management actions is required
- how it will be calculated
- how risks will be managed around ensuring security of payment to the Biobanking Trust Fund (e.g. if the company becomes insolvent).

Encouraging offset supply is further discussed under section 3.4.3 *Barriers to participation – landowners* below.

Recommendation:

A5. Provide flexibility for proponent-owned and managed biobank sites and develop clear operational guidance for their use.

3.4.2.2 Offsets fund/brokerage

During the review, there were suggestions from various stakeholders that increasing offset supply could be facilitated through an offsets fund or a broker operating in the market, connecting proponents to landowners willing to set up biobank sites. Some ecological consultants and other organisations are currently providing informal brokerage services. This occurs when ecological consultants are hired by proponents to assess development sites and as part of this work determine areas in which required biodiversity credits are likely to be located. Ecological consultants can then assist proponents to connect with relevant landowners.

The BioBanking Public Register was intended to perform some of the functions of a broker by displaying expressions of interest from landowners interested in setting up a biobank site. This would allow proponents to determine if matching credits could be secured for individual development proposals. However, feedback has been that the public register is difficult to use and the ability to search for information on what credits are available, or potentially available, is limited. OEH has commenced work to make the public register more user-friendly and for it to display a broader range of information on credit availability and past transactions. It will contain functions for both landowners and proponents to put expressions of interest to sell or buy biodiversity credits.

The NSW Government has also committed to establishing a Biodiversity Offsets Fund for proponents of major projects. Some of the potential functions of the Fund would be to source and buy biodiversity offsets using money from the fund; advertise to landowners the types of biodiversity offsets required in a given area; and work with landowners to assist them with establishing biobank sites on their land. Given the fund will act as a buyer and will work with landowners who sell their biodiversity credits, the fund will be performing some functions of a broker. Consideration should also be given to extending this fund to proponents of non-major projects who use the BioBanking Scheme.

Action underway:

OEH has commenced work on improving the functionality of the public register so it can more adequately assist with brokerage.

Recommendation:

A6a. As part of the development of the Biodiversity Offsets Fund, consider extending the fund to proponents who participate in BioBanking.

3.4.2.3 Inflexibility of credit trading rules

The complexity and inflexibility of the offset rules for trading biodiversity credits was noted in many submissions from ecological consultants and the development industry.

Each biodiversity credit has a credit profile. The credit profile is an important part of the offset rules that match how impacts on biodiversity at a development site are offset by improvements in biodiversity at a biobank site. The offset rules ensure that the credits used to offset the biodiversity lost on development sites are targeted to gains at a biobank site that have the same biodiversity, or are of a higher conservation priority.

Ecosystem credits currently have five attributes on the credit profile and under the offset rules all five attributes must be matched. Having several criteria means there is a large number of different credit types and correspondingly fewer credit matching options between sites. This increases complexity of the rules and fragments the credit market thereby reducing credit trading opportunities.

A number of proposed changes were included in the draft BBAM to simplify the credit profile and offset rules. Further discussion of these amendments and recommendations is set out in section 4.8 below.

3.4.2.4 Red flag areas

'Red flag areas' are identified using the BBAM and indicate areas of high biodiversity conservation value where development cannot take place. To provide for some flexibility, proponents can seek a red flag variation, which means that if additional assessment criteria are met (as outlined in the BBAM), a development that impacts on a red flag area is regarded as meeting the 'improve or maintain' standard. Uncertainty around whether a red flag variation would be approved by OEH was identified as a key barrier to participation in the scheme.

OEH proposed amending the BBAM to provide greater clarity around what criteria must be met in order for a development that impacts on a red flag area to be considered to still meet the 'improve or maintain' standard. This was generally supported in submissions.

The draft BBAM proposed several amendments related to 'red flag areas'. This included:

- changing the name to '*areas of high biodiversity conservation'* to change the perception that a red flag area automatically meant that BioBanking couldn't be used
- extending the definition of 'red flag areas' to include the riparian areas of streams and rivers and SEPP14 wetlands
- providing a more robust definition of vegetation in low condition
- increasing the minimum threshold for patches of vegetation that trigger a red flag from 4 hectares to 10 hectares.

Discussion of these amendments and recommendations is set out in section 4.6 below.

3.4.2.5 Expectation of higher transaction costs

Proponents' expectations of higher transaction costs associated with BioBanking compared to alternative assessment pathways was identified as a barrier to participation during the review. These costs included higher anticipated offset ratios, the need to pay for management actions for an offset site upfront, and uncertainties and inefficiencies associated with red flags. The objectivity of the methodology means that offset ratios cannot be negotiated with a consent authority in the same way that they can through an alternative assessment pathway (e.g. under section 5A of the EP&A Act). Under this assessment pathway, proponents apply the seven part test to determine if a development will have a significant impact on threatened species, prepare a species impact statement and negotiate mitigation and offsetting requirements with local government officers.

The benefits of BioBanking are that it provides certainty and consistency regarding how biodiversity impacts are to be addressed and offset. It can therefore reduce the time costs associated with biodiversity impact assessment and negotiation of a suitable offset. It also provides an objective assessment of biodiversity, which removes any perception of political influence in the process.

It was noted that the appeal of BioBanking depends on many interrelated factors. As such, correcting one source of inefficiency (e.g. lack of flexibility) may result in loss of other benefits, such as upfront certainty and objectivity. As described above, work is being undertaken to increase credit supply, remove inefficiencies associated with red flags and improve flexibility by allowing proponents to establish offsets on their own land. These amendments have been carefully considered to increase the useability of BioBanking without losing the existing benefits of upfront certainty and objectivity.

3.4.3 Barriers to participation – landowners

The successful operation of BioBanking is largely dependent on landowners participating in the scheme to ensure that there is adequate offset supply to service the demand from proponents for biodiversity credits. Feedback from stakeholders noted that the cost of assessing a biobank site was a potential barrier to participation for landowners, especially when coupled with the lack of certainty that the credits generated would be sold.

3.4.3.1 Site assessment costs and certainty of finding a buyer

The discussion paper for the BioBanking review identified that site assessment costs can be in excess of $10,000 per biobank site. Operational experience since this time had identified that the costs may be closer to $30,000–$40,000 per site.

The overall costs for the site assessment are influenced by a number of factors. These are:

- complexity of the site in terms of vegetation types and land title
- variability in management needs/actions
- size of the property
- accessibility to and within the property.

As participation rates in the scheme have increased, competition among assessors has begun to drive survey costs down, particularly in Sydney. However, high site assessment costs coupled with uncertainty in finding a credit buyer remains a key barrier to landowner participation. Addressing this may significantly improve offset supply.

Some submissions suggested providing funding support to landowners to assist with site assessment costs. Submissions also suggested the Growth Centres Biodiversity Offset Program be considered as a model to address this barrier to participation. This program currently undertakes site assessments, prepares management plans and biobanking agreement applications on behalf of landowners and agrees to purchase all credits from

biobank sites. The scale of the Growth Centres Biodiversity Offset Program[13] allows for this level of assistance to be offered to landowners.

The NSW Government has recently consulted on setting up a Biodiversity Offsets Fund for Major Projects, as discussed in section 3.4.2.2. The Offsets Fund will seek to purchase offsets from landowners in the form of biodiversity credits generated at biobank sites. One proposal put forward is that the fund performs a 'program manager' role and provides interest-free loans to landowners to undertake assessments of offset sites. The fund could then recoup this loan when it purchases the biodiversity credits generated at the site.

Recommendation:

A6b. As part of the development of the Biodiversity Offsets Fund, investigate how the fund can assist with information provision to landowners regarding types of sites that are in demand and what assistance can be provided to landowners for establishing biobank sites.

3.5 Capacity and advocacy

3.5.1 Extension and education

OEH advocates participation in BioBanking by providing information to key stakeholders, including landowners, proponents, Biobanking Assessors, lawyers, local government, Local Land Services (previously Catchment Management Authorities), and other state and federal agencies.

There is evidence that some local councils are now actively promoting BioBanking for both proponents and for landowners, especially landowners in areas zoned for environmental or conservation purposes. BioBanking Assessors often act as advocates for BioBanking by recommending proponents use BioBanking over alternative assessment processes where there are clear benefits for the proponent. This was raised in submissions from multiple ecological consultants.

It is noted that many farmers and rural landowners do not have clear information available to them on the benefits of biobanking agreements. It is intended that the Biodiversity Offsets Fund 'program manager' will actively seek new biobank sites and work with landowners to establish biobanking agreements, thereby educating landowners about the relative benefits of BioBanking.

Through their submissions, many stakeholders suggested the development and implementation of a targeted extension and education program in areas where BioBanking may have most application. Some mentioned that increased advocacy from the local government sector could be beneficial. The Hills Shire Council and the Law Society of NSW recommended promoting the economic benefits of the scheme, while the Northern Rivers Catchment Management Authority noted that case studies could be used to show prospective participants that BioBanking is cost effective.

OEH recognises that promoting the benefits of BioBanking to potential participants is required to encourage increased uptake of the scheme. As such, four case studies have recently been prepared to demonstrate the tangible benefits of the scheme to potential participants. The case studies draw on the personal experience of public and private landowners and are available on the OEH website at www.environment.nsw.gov.au/biobanking/landowners.

[13] As part of the certification of the Growth Centres State Environmental Planning Policy, a $530 million conservation fund (in 2005–06 dollar values and subject to indexing) has been established to target strategic areas for reservation or conservation agreements and to purchase land for conservation purposes.

Action underway:

OEH has prepared four case studies to promote the BioBanking business case to potential participants, including public land managers, private landowners and proponents.

Recommendation:

A6c. As part of the development of the Biodiversity Offsets Fund, increase extension and advocacy to landowners, particularly farmers, to ensure they have access to clear and accurate information on BioBanking.

3.5.2 Biobanking Assessors Accreditation

Throughout the review, some stakeholders, including the Biobanking Assessors Accreditation Panel, indicated a need for changes to the current accreditation and training program to ensure that accredited Biobanking Assessors are appropriately qualified for their duties.

A number of submissions from ecological consultants identified the need for a field component within the training course. This is to ensure confident use of field survey techniques required to complete assessments in accordance with the methodology. In response to this feedback, the BioBanking training course has been restructured to include a two-day field component.

A number of submissions, particularly from ecological consultants, identified and supported the need for stricter requirements for flora survey experience in the accreditation process, in recognition of the methodology's strong reliance upon identification and mapping of vegetation types. This is considered important to ensure quality of information included in biobanking statements and agreement applications and therefore speed up approval times.

Recommendation:

A7. Update the accreditation criteria to incorporate stronger requirements for flora survey experience.

3.6 Biobanking agreements

3.6.1 Aboriginal cultural heritage

The NSW Aboriginal Land Council has noted that a standard clause in current biobanking agreements may prevent access to cultural sites and the ability to carry out Aboriginal cultural practices such as hunting of native wildlife, fishing and gathering of native bush products. The standard clause stipulates that any act that may harm biodiversity values, including, but not limited to, any native animals, plants, threatened species, populations and ecological communities and their habitats on the biobank site cannot occur.

This clause is intended to ensure activities undertaken on biobank sites are in accordance with existing legislation that prevents harm to flora and fauna.

OEH recognises the importance of access to cultural sites and the continuation of cultural practices where the right to undertake these exists. Where biobanking agreements are proposed on Crown land, a native title search is undertaken and the biobanking agreement must be referred to the Minister administering the *Crown Lands Act 1989* for consent.

OEH has also, where appropriate and where these rights exist, amended biobanking agreements to ensure they contain provisions that allow access to Aboriginal sites and the ability to carry out Aboriginal cultural practices.

Action underway:
When drafting biobanking agreements, appropriate consideration is given to including provisions that enable access to Aboriginal sites and the continuation of Aboriginal cultural practices where these rights exist.

3.6.2 Management plans and actions

As part of the process of preparing a biobanking agreement application, landowners are required to calculate how much management actions will cost to create biodiversity credits on their land. These costs then determine the component of the credit sale price that will support management of the site in perpetuity. Stakeholders indicated that further guidance is required on the costing of management actions. Currently, guidance is provided in the *Guide to establishing a biobank site*[14] and the *Biodiversity Credits Pricing Spreadsheet*[15].

Additional guidance is being developed to supplement this information. This will include information on a process for obtaining quotes and consideration of initial and recurring costs for particular management actions. This material will be developed in consultation with Local Land Services and local councils to ensure it is targeted to meet the needs of relevant landowners. It will also draw upon the experience of participants in BioBanking, including proponents, landowners and ecological consultants and other experienced land managers, including the National Parks and Wildlife Service.

OEH has engaged an actuary to review the 'Credit pricing spreadsheet' to assist with managing the uncertainty of future contractor rates and to appropriately price credits. The spreadsheet's functionality and clarity will also be improved to provide simpler and clearer advice on the costing of management actions.

Annual payments to landowners are set out in biobanking agreements and are increased in line with the Consumer Price Index (CPI). During consultation, landowners expressed concern that circumstances may result in them having insufficient funds to meet their management obligations. This might occur if, for example, contractor rates increase beyond the CPI.

It is considered that biobanking agreements and the BioBanking Regulation contain sufficient flexibility to manage this risk. Biobanking agreements have an annual reporting cycle, which provides landowners with an opportunity to raise issues and concerns about the cost of undertaking the management actions required for that year and the funding available. Biobanking agreements also provide for periodic reviews of each of the management plans. Both these reviews provide opportunities for adaptations to be made to the management plan to address funding issues or changes in management priorities for the site over time.

In addition to this adaptive management process, in the event that there is an operational deficit for the biobank site above a specified threshold, the Minister can reduce or stop payments for that biobank site for a specified period of time. In doing this, the Minister would also suspend or vary the landowner's obligations to carry out management actions to reflect the cessation in payments if satisfied that this would not have a negative impact on the biodiversity values protected by the agreement. This enables the fund to invest and recoup money so annual payments can commence again.

[14] www.environment.nsw.gov.au/biobanking/landowners.htm
[15] www.environment.nsw.gov.au/biobanking/calculator.htm

Action underway:

OEH has engaged an actuary to review the credit pricing spreadsheet so that it appropriately calculates the in perpetuity cost of management actions to assist with appropriately pricing credits.

Recommendations:

A8. Develop standard guidance on costing management actions based on operational experience in BioBanking and experience with other conservation agreements and management of national parks.

A9. Provide information to landowners around the flexibility provided by biobanking agreements in the event annual management payments are not sufficient to fund the agreed management actions.

3.6.3 Additionality

For offsets to result in a gain to biodiversity, biodiversity credits may only be created in respect of management actions that are additional to those already required on a particular area of land. Therefore, where a biobanking agreement is established on land that is subject to an existing conservation obligation, the allocation of credits for the biobank site may be reduced (discounted) taking into account the conservation measures or actions that are already required to be carried out. OEH has produced an information sheet that explains this circumstance, known as 'additionality' and its effect on credit creation[16].

Submissions from councils generally expressed the view that councils could not easily predict the level of credit discounting likely to apply to a particular parcel of their land. Particularly, there is a lack of clarity around the level of additionality applied to public land. The level of additionality that applies to a particular parcel of council land depends on various factors, including whether a plan of management is in place and what the obligations are under that plan of management. Councils often do not agree with the additionality that is calculated by OEH.

Some councils pointed to potential perverse incentives associated with the additionality rules, in that operational land has the potential to generate a greater number of biodiversity credits than community land. OEH recognises that some of these issues go to broader issues around classification of land and government obligations to manage land for conservation and community benefit. These issues need to be considered within that broader context, rather than through the rules for biobanking agreements.

However, OEH recognises that the current guidelines for calculating additionality need to be revised to address the issues identified during the review.

Recommendation:

A10. Revise the guidelines for calculating additionality on public land to provide further clarity on determining the level of credit discounting.

3.6.4 Fit and proper person

Under the BioBanking Regulation, the Minister must, before entering into a biobanking agreement with a person, consider whether the applicant is a 'fit and proper' person to enter and fulfil the obligations of a biobanking agreement. The 'fit and proper' person test aims to prevent organisations and individuals with poor environmental records, a past history of bankruptcy or convictions for an offence involving fraud, from establishing biobank sites.

[16] See: www.environment.nsw.gov.au/resources/biobanking/2010187Biobankadditionality.pdf.

This is to minimise the risk that a biobank site will not be managed in accordance with the biobanking agreement.

Most submissions that mentioned the 'fit and proper' person test supported retaining the test because it was seen as a useful precaution against non-compliance with management and monitoring requirements in biobanking agreements. Those who did not support the test argued that, as it only applies to the first owner and not to subsequent owners, it is a superfluous requirement.

Recommendation:

A11. Retain the fit and proper person test.

3.6.5 Duration and termination of biobanking agreements

Submissions from some stakeholders expressed concern that, although biobanking agreements are generally in perpetuity, they can be varied or terminated by the Minister if a mining authority or petroleum title is granted over the land and the Minister is of the opinion that the authorised activity will adversely affect the biodiversity values protected by the biodiversity agreement.

The removal of biobank sites is not promoted under the scheme. These sites are established for the purpose of protecting biodiversity in perpetuity. However, the termination provisions within the TSC Act reflect the practical realities of changing land-use needs along with the difficulty associated with predicting these in the long term. In the rare event that a biobanking agreement is terminated, the TSC Act stipulates that the Minister may also direct the holder of the mining authority or the petroleum title to retire a number of biodiversity credits, up to the number that were created for that site under the original agreement. Biobank sites that may be terminated in the future will therefore usually be offset taking into account the biodiversity present on the site, and the predicted gain that was to be achieved through the initial biobanking agreement.

3.7 BioBanking Trust Fund

The Biobanking Trust Fund (BTF) is an important component of the scheme framework as it invests funds for the management of biobank sites on behalf of landowners. These funds, plus investment earnings, are used to make annual payments to biobank site owners to cover the cost of managing the site in perpetuity. As at 30 June 2014, the total funds held by the BTF were $31,009,402.

The Environmental Trust has successfully managed the BTF since its inception. Over the six years as the fund manager the Environmental Trust has:

- managed the investment of $22,032,837 for the first 21 biobank sites by investing in New South Wales Treasury Corporation (TCorp) hour-glass investment facility[17]
- established 63 investments accounts within TCorp and reconciled these on a monthly basis
- made 27 annual management payments to site owners and administrative fee payments to OEH
- provided 28 annual statements to site owners
- prepared 23 quarterly reports and five annual reports on the BTF.

The Environmental Trust, on advice from OEH, devises the investment strategy for funds within the BTF. The current investment strategy is for different proportions of funds to be invested in cash, medium-term growth and long-term growth facilities (Table 3). TCorp, the

[17] Management of the investment of funds for six newly established biobank sites is also underway.

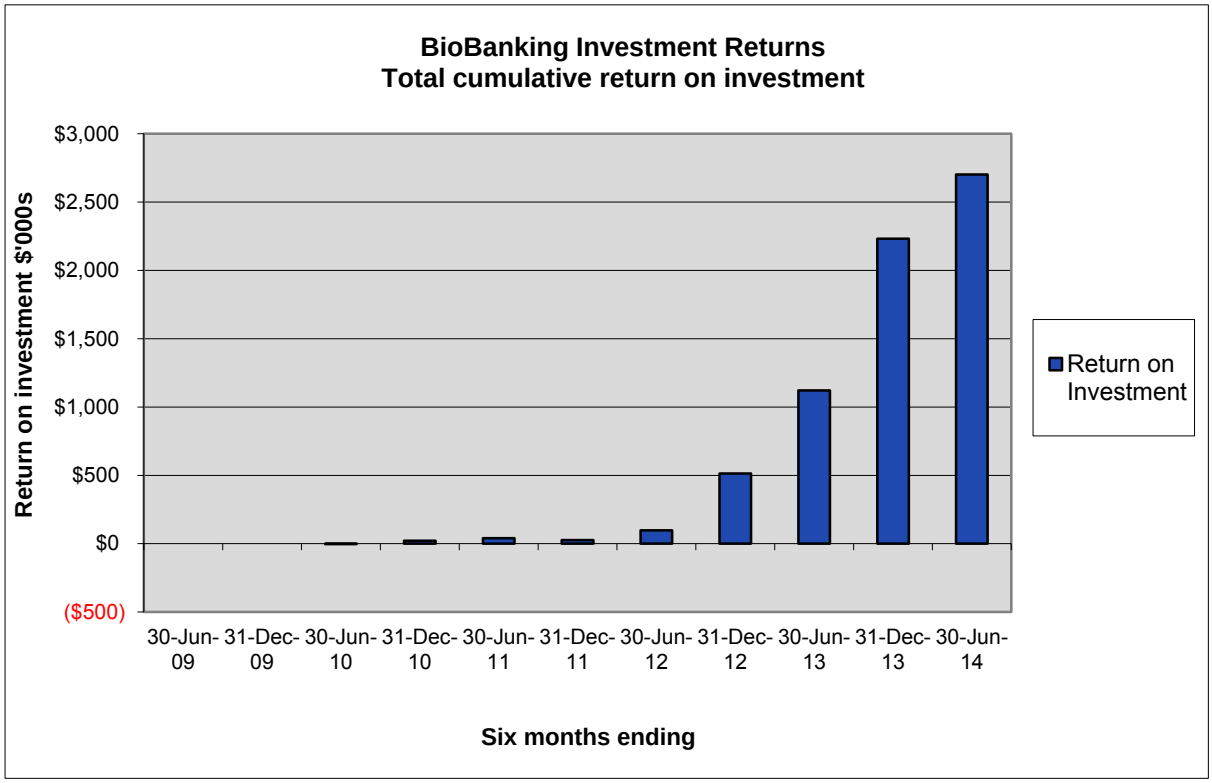
central financing authority for the NSW public sector, delivers the BTF investment strategy by managing the day-to-day investment activities for the funds.

As of June 2014, the BTF has made a total cumulative investment return of just over $2,701,850 (Figure 1). No funds were present in the BTF up until April 2010. Fund returns were fairly modest up until 30 June 2012, with a weighted annualised percentage return of 4.44% (Table 3). Over the last 12 months (until June 2014) fund returns have increased significantly, with a weighted annualised percentage return of 9.15%. This increase reflects the higher total investment balance, in addition to a more positive outlook on the Australian and overseas share markets.

Table 3: Investment strategies

Investment facility	Purpose	Proportion of TFD invested pre April 2012	Average Annual returns pre April 2012	Proportion of TFD invested post April 2012	Annual returns as at 30 June 2014
Cash facility	Allows short term liquidity for expected higher draw down of funds in first five years	30%	4.92%	30%	2.92%
Medium-term growth facility	Replenishes cash as it is drawn down and provides higher returns	30%	5.22%	20%	7.65%
Long-term growth facility	Provides higher returns to maintain capital base in perpetuity	40%	3.49%	50%	13.49%
Total – Weighted annualised percentage return			4.44%		9.15%

Figure 1: Total cumulative return on investment



TCorp performance reporting shows that the percentage per annum rates of return for the cash, medium growth and long term growth facilities are above benchmark returns. The BTF investment strategy is therefore producing a good percentage per annum rates of return on investment. However, to ensure the fund continues to meet return expectations in the changing market environment, regular reviews of the investment strategy should be undertaken.

Recommendation:

A12. Undertake regular reviews of the BioBanking Trust Fund investment strategy.

4. Review findings: BioBanking Assessment Methodology

This section of the report discusses recommended changes to the BBAM after consideration of the written submissions on the draft revised BBAM that was released for public consultation on 10 May 2012. The proposed changes have been made with the intent of improving the methodology and achieving consistency in biodiversity assessment offsetting practices, where possible.

The revised proposed BBAM has been restructured into three main sections – biodiversity assessment, impact assessment, and biodiversity offset strategy – so that it aligns with the FBA. Recommended changes to the individual components that will form these three main sections are outlined below.

4.1 Landscape value

The draft BBAM contained some minor amendments to:

- improve the assessment of connectivity
- include an additional category for assessing very large remnant areas.

These amendments were supported, particularly by ecological consultants, on the basis that they would assist with simplifying the methodology and provide for better conservation outcomes. Submissions suggested that additional refinements could be made to further simplify the methodology in this respect.

In response to this feedback, further work has been undertaken to develop these proposals in consultation with ecological consultants. This has resulted in related recommendations that will further simplify the methodology and improve conservation outcomes. These include:

a) the requirement for a single outer and inner assessment circle that can be scaled in size according to the proposal to remove the need for multiple 1000-ha circles for large proposals
b) improving the accuracy in assessing change in the cover of native vegetation within the assessment circles by using 5% increments rather than 10% increments to score loss and gain in cover
c) for linear shaped developments, using a buffer area surrounding the development footprint instead of assessment circles
d) providing further categories to assess connectivity at a development site or an offset site, including whether the site is part of a state significant or regionally significant biodiversity link.

Recommendation:

B1. Provide for the assessment of landscape features at a development site and a biobank site to:

- assess the impact of connectivity within the outer assessment circle
- add an additional category for assessing patch size to allow for ‘very large’ patches of remnant vegetation
- allow for a single outer and inner assessment circle that can be scaled according to the size of the proposal
- assess the amount of native vegetation cover within the inner and outer assessment circle in 5% increments

- provide specific criteria for assessing developments that are linear shaped, including assessing the impact that the development has on the patch area to perimeter ratio
- provide further categories to assess connectivity at development or offset sites, including whether they form part of a state significant, or regionally significant, biodiversity link (section 4.2).

4.1.1 Strategic location of offset sites

The draft BBAM included a proposal to incentivise more strategically located offsets by applying a weighting to the landscape value score where a biobank site includes riparian land. Most submissions supported incorporating more strategic considerations and, in response, consideration has been given to how this can be further accommodated.

It is proposed that further criteria is used to identify strategic locations of biobank sites, including state and regionally significant biodiversity links, and the riparian areas of important wetlands and estuarine areas. It is recommended that, where a biobank site is located in a strategic location, there will be no need for ecological consultants to undertake the connectivity assessment at that site. The site will instead automatically receive a certain score for landscape connectivity that will be higher for more important strategic locations. Biobank sites that are not in a strategic location can still achieve the same score for improving connectivity, but this will need to be determined on a case-by-case basis by assessing the landscape components at the site.

Future reforms could include additional criteria to incentivise a more strategic approach to the location of biobank sites, delivered via a spatial viewer. This includes sites identified under the *Saving our Species* program and important biodiversity assets such as areas of remnant vegetation that provide connectivity within an IBRA sub region.

Submissions from local government suggested their investment priorities should also be linked to locating biobank sites. It is intended that the Biodiversity Offsets Fund for major projects will play a role in identifying future biobank sites. Information provided by local government and Local Land Services could help the fund to fulfil this important function.

Recommendations:

B2. Include a provision that assesses the strategic location of an offset site in considering its landscape value and align this provision to streamline the assessment of connectivity (section 4.2.6).

A15. Consider other criteria that may be used to further identify the strategic location of biobank sites.

A16. Develop a spatial viewer that identifies the strategic locations of biobank sites and investment in biodiversity

A6d. As part of development of the Biodiversity Offsets Fund, consider future engagement with strategic land use and mapping processes and the role of local government and Local Land Services in identifying strategic locations for biobank sites.

4.2 Assessing native vegetation

Some submissions suggested improvements could be made to the site assessment and data collection methods used to assess development and biobank sites. There were concerns around the description and accuracy of vegetation types in the Vegetation Types Database, and the ability to assign an endangered ecological community (EEC) to some vegetation types. These sorts of issues can add uncertainty and costs to a biobanking assessment and can deter proponents from using the scheme. Further guidance in this area is recommended.

To identify plant community types (PCTs), it is recommended that the BBAM contains specific instructions on the survey design and extent, and specifies the requirements for an assessor to undertake a quantitative analysis of existing and/or new site survey data to identify a plant community. This is consistent with the approach undertaken through the NSW Master Plant Community Type classification.

OEH has established a PCT classification change control panel which is chaired by the Royal Botanic Gardens & Domain Trust to ensure a rigorous approval process is in place for revising and updating PCTs. To date, new PCTs have been approved for the Hunter and Central Coast, and parts of Sydney Metro, and the classification confidence level of many existing PCTs has been raised from very low to high. This work will continue to occur across the state, with a major revision of PCT on the north coast expected to be completed in 2014. The ongoing work on the PCT classification will continue to improve the definition and identification of plant communities.

OEH has also undertaken work to provide consistency in the process to determine the association between PCTs and EECs, and clarify the relationship between PCT and Biometric Vegetation Types (BVTs). The Vegetation Information System (VIS) classification database is now the primary database that identifies associations between PCTs and BVTs as well as EECs, providing clarity for assessors and consistency between data used in the methodology and the Threatened Species Profile Database.

Some stakeholders raised concerns that the current BBAM does not explicitly require impacts on hollow bearing trees to be included on the biobank site. The methodology already requires assessors to identify hollow bearing trees during the site survey and establish the site value score for each vegetation zone. Examination of whether this information can be assigned to a class according to the benchmark and then be used as part of the offset rules is recommended.

Recommendations:

B3. Provide a more rigorous and quantitative method for assessing, identifying and mapping Plant Community Types (PCTs) at development and biobank sites (section 5.2.1).

B4. Provide greater clarity in the BBAM about the relationship between PCTs and Biometric Vegetation Types and require BBAM assessments to specify PCTs to avoid confusion (section 5.2.1).

A17. Investigate the feasibility of including a provision that assigns a class for the number of hollow bearing trees in a vegetation zone according to the benchmark for the Plant Community Type based on the site attribute score.

4.3 Threatened species

The methodology uses two approaches for assessing threatened species and populations. The first method predicts species occurrence at a development site or an offset site using habitat surrogates such as plant community type, geographical location, patch size and vegetation condition (i.e. the ecosystem credit category). The second method uses targeted threatened species surveys or an expert report. This method is used to assess the majority of threatened species listed in NSW.

Some submissions suggested that a greater number of species should be assigned to the ecosystem credit category. Other submissions called for better information around threatened species survey requirements, particularly for flora species and the use of expert reports.

The draft BBAM proposed a number of amendments for assessing threatened species. These amendments, and the review's findings, are discussed below.

4.3.1 Assessing species that can be predicted by habitat surrogates (ecosystem credits)

For species assessed as ecosystem credits, three amendments were proposed. The first was to apply the filters used to predict threatened species to the 'vegetation zone', rather than the previously used 'threatened species sub zone'. The threatened species sub zone duplicated the area of vegetation zones in many assessments, adding to the cost and complexity of an assessment. Ecological consultants and industry groups supported this amendment, however environment groups were concerned it would weaken the methodology.

The second amendment removed the requirement to measure the 'patch size including low condition vegetation' and just use the area of the vegetation zone. Many stakeholders argued that the current provision was confusing and its removal has little impact on the prediction of species. This is because vegetation in low condition is already used as a filter to predict threatened species and the vegetation zone area provides a reliable measure of area.

The final amendment provided an additional step in the methodology for an assessor to undertake an optional site-assessment where there were concerns that the filters had over-predicted threatened species that were likely to occur at the site. The additional step allows an assessor to determine whether the habitat components used by the species are present on the site. If none of the components are on site, the assessor could remove the species from the list of predicted species and include the justification in the biodiversity assessment report for the proposal. Presently, to do this, an assessor is required to use more appropriate local data which is certified by the Chief Executive of OEH.

This amendment assists in providing an accurate assessment of the site by applying a set methodology. It was supported by ecological consultants and industry groups. Some environment groups opposed this amendment because of concerns it would lead to lower offset requirements as it would enable assessors to target the removal of threatened species that have high offset requirements.

On balance, the amendment is recommended. OEH is confident that the methodology retains a high standard, as an assessor must establish that the site contains no foraging, breeding or roosting habitat before a species can be removed. The assessment report is reviewed by OEH prior to issuing a biobanking statement.

Recommendations:

B5. Use vegetation zones as the map unit for predicting threatened species at development and biobank sites and delete threatened species subzones from the methodology (section 5.2.2).

B6. Remove the attribute, 'patch size including low condition vegetation' from the filters to predict threatened species from the methodology (previously section 3.2).

B7. Include an optional step for assessing whether all of the habitat components used by a threatened species that requires ecosystem credits, are present on development and biobank sites (sections 6.3.1.6 – 6.3.1.9).

4.3.2 Assessing species that cannot be predicted by habitat surrogates (species credits)

The draft BBAM included amendments that more clearly express the requirements for species that are assessed through a targeted species survey or an expert report, and to improve the rigour of the assessment. This includes providing a more explicit assessment of the quality of the habitat features on the site, and the ability to remove species that are

considered a vagrant within the IBRA subregion from the candidate list of species for survey. These amendments were generally supported in a number of submissions.

One draft amendment provided for the removal of a species from the candidate list of species for survey if it is only predicted within a particular IBRA subregion. This amendment is not included in the final recommendations due to the lack of threatened species survey records in many parts of NSW.

Recommendation:

B8. Provide a more rigorous assessment requirement to establish and assess the list of candidate species that require assessment by targeted survey or expert report at a development or biobank site (section 6.5).

4.3.3 Identified populations

The current BBAM makes provision for the Chief Executive to develop an Identified Populations database which would identify populations of threatened species that are known to be present on land.

Since the inception of the scheme, no populations have been identified. Subsequently, it is recommended that this provision is deleted from the methodology.

Recommendation:

B9. Delete the provision in the BBAM that allows the Chief Executive to develop an Identified Populations database (previously section 3.6).

4.3.4 Threatened species survey guidelines

As part of the assessment of a development or biobank site, species surveys are carried out to determine if certain threatened species are present. It is important for species surveys to be standardised, to set minimum standards, and reduce the risk of inaccurate conclusions.

In recognition of this, OEH has released threatened species survey guidelines for amphibians[18]. The discussion paper recognised that further guidelines are needed for flora and other types of fauna, in order to set the minimum standard for survey design and effort for particular threatened species.

Submissions received from individuals, local councils and proponents support the development of further species survey guidelines to provide clarity around what is required for particular species. A program will therefore be undertaken to develop threatened species survey guidelines for flora, bats and other relevant species in consultation with industry and other relevant stakeholders.

Recommendation:

A18. Develop threatened species survey guidelines for flora, bats and other relevant species.

[18] See www.environment.nsw.gov.au/resources/threatenedspecies/09213amphibians.pdf

4.4 Biobanking statements

4.4.1 On-site measures

A key element of improving or maintaining biodiversity values is that the direct and indirect impacts of the development are avoided and minimised through on-site measures. Ways in which biodiversity impacts can be minimised through on-site measures were considered when revising the BBAM and in the development of the FBA.

Under the proposed revised BBAM, proponents need to demonstrate that they will carry out reasonable on-site measures to avoid and minimise impacts on biodiversity during all phases of the project such as during site selection, planning, construction and operational phases of the development. It is proposed that the revised BBAM will contain further guidance on this to help proponents determine reasonable on-site measures, including an explanation of reasonable steps that should be taken to avoid and minimise impacts during the project life cycle. Examples of mitigation measures that can be employed during the construction and operational phase of a project are also provided.

Recommendation:

B10. Include specific guidance for demonstrating that a development has undertaken reasonable measures to avoid and minimise the impact of development on biodiversity (section 8.3).

4.5 Improve or maintain standard

The standard to improve or maintain biodiversity values which underpins BioBanking was generally supported in submissions. There were some concerns expressed by environment groups that the overall amendments to the BBAM would weaken the improve or maintain standard by allowing more impacts on ‘red flag areas’ and lowering the offset requirement.

Some feedback suggested that the methodology did not include sufficient information for a proponent to demonstrate that they had first avoided and minimised impacts on biodiversity. In response, it is recommended that the BBAM include specific criteria that a proponent can use to demonstrate that they have taken reasonable steps to avoid and minimise impacts on biodiversity.

During the operation of the scheme, OEH has received feedback from proponents suggesting that a lack of flexibility in the methodology constrained positive environmental outcomes. Some suggested that there was no flexibility to vary the outcome of the methodology to accommodate situations where an equal or greater environmental outcome could be achieved, where normal credit purchase and retirement is not possible, or where there is an extremely small shortfall in specifically required biodiversity credits. It is noted that the regulatory frameworks of other assessment methodologies used by OEH, such as for biodiversity certification, contain clauses that permit the Minister or Chief Executive to allow a minor variation of the methodology.

The minor variation provision was included in the draft BBAM and had broad support across a variety of stakeholders. However, some stakeholders, particularly environmental groups, were concerned the provision would lead to inferior outcomes. It was suggested that any provision to vary the methodology should be contained in the BioBanking regulation, rather than the methodology. OEH agrees that such a provision should be included in the BioBanking regulation, however the question of how this is to be achieved requires further examination, and may be impacted by the findings of the biodiversity legislation review.

Recommendations:

B10. Include specific guidance in the BBAM for demonstrating that a development has undertaken reasonable measures to avoid and minimise the impact of development on biodiversity (section 8.3).

A14. Consider amending the BioBanking regulation to allow the Minister to approve a minor variation in the application of the methodology in a limited set of circumstances and develop a set of clear rules and operational guidance to support the use of this provision. This may be considered in the context of the broader biodiversity legislation review or may proceed separately.

4.6 Red flag areas

Threatened species and EECs listed under state and national legislation, individual species which cannot withstand further habitat loss and vegetation types with high regional value (usually highly cleared types) are all deemed 'red flag areas' by the BBAM. 'Red flag areas' generally cannot be developed although there is some flexibility in the BBAM to allow for further assessment in these areas so that local circumstances can be taken into account (known as 'red flag variation').

The draft BBAM included proposals to address both the definition of 'red flag areas' and the clarity of the variation criteria.

4.6.1 Changing name from 'red flag area' to 'area of high biodiversity conservation value'

There were opposing views in the submissions regarding the proposal to change the name from a 'red flag area' to an 'area of high biodiversity conservation value'. Some stakeholders felt that red flags clearly articulated that development should not occur in these areas and that development proposals should avoid these areas. Other views were that the terminology discourages proponents from participating in BioBanking because of the incorrect perception that red flag areas could not be cleared under any circumstances. On balance, it is recommended that the 'red flag' terminology be retained, as it is now well-known and any gains that may be associated with changing the name would probably not outweigh the confusion any change may cause.

4.6.2 Including riparian areas and State Environment Planning Policy No 14 – Coastal Wetlands areas in the definition of a 'red flag area'

This amendment reflects the environmental sensitivity of these areas to the impacts of development. The proposed amendment was supported by many environmental and industry stakeholders. It is recommended that the riparian area of wetlands listed on the *Directory of Important Wetlands Australia* and the riparian area of estuarine areas are also included as red flag areas.

4.6.3 Providing a more robust definition of vegetation in low condition

There was strong support to amend how low condition vegetation is defined, particularly for determining 'red flag areas'. The draft BBAM proposed basing the definition of low condition on the site value score of the vegetation being ≤ 34. However, some stakeholders felt that it would affect how some threatened species would be assessed, and others pointed out the difficulty of using the site value score in areas where plot and transect data couldn't be obtained.

Following consideration of all these issues, it is recommended to only use the site value score ≤ 34 as a threshold for defining a 'red flag area' for plant community types and retaining the existing definition of low condition vegetation.

4.6.4 Clarifying red flag variation criteria

A minor editorial amendment was proposed to more clearly define the criteria that a proponent is required to address when preparing a red flag report. This was generally supported, particularly by proponents.

4.6.5 Increasing the minimum threshold for areas of highly cleared vegetation types from 4ha to 10ha to allow consideration of a red flag variation report

The proposal in the draft BBAM to increase the area of a highly cleared vegetation type to 10ha was not supported in many submissions. Through operational experience, OEH has also identified a need to provide consistency in how a 4ha patch of vegetation is defined in the BioBanking regulation and the BBAM. For this reason, it is proposed the 4ha threshold be maintained with the BBAM amended to provide a clear and consistent method for assessing a 4ha patch of vegetation that contains a highly cleared vegetation type.

Further work undertaken on improving the BBAM has also highlighted the need to include some additional criteria to define when a threatened species triggers a 'red flag area'. This includes land that the Minister for the Environment has declared as critical habitat. Further it is recommended that the discovery of a threatened species or population on a site that has not previously been recorded in an IBRA subregion according to records in the Atlas of NSW Wildlife should trigger a red flag.

Recommendations:

B11. Include the following features in the definition of 'red flag areas':

- riparian buffer zones bordering 4th order or greater streams and rivers, important wetlands and estuarine areas
- state or regionally significant biodiversity links
- land that the Minister for Environment has declared as critical habitat in accordance with section 47 of the TSC Act and which is listed on the Register of Critical Habitat in NSW
- a threatened species or population found on a development site that has not previously been recorded in the IBRA subregion, according to records in the Atlas of NSW Wildlife (section 9.2.2).

B12. Include a more robust condition threshold based on the site value score (≤ 34) for determining when a red flag variation report is required (section 9.2.2).

B13. Provide a consistent approach in the method used to define a 4 hectare area of highly cleared vegetation type (section 9.2.3.3).

B14. Provide a clear expression of the intent of the red flag variation criteria (section 9.2).

4.7 Credit calculations

A number of amendments to the credit calculations at a development site and an offset site were proposed in the draft BBAM. Many of the written submissions commented on the amendments and they were further discussed in detail with stakeholders at the briefing sessions. Three of the proposed amendments are discussed below.

4.7.1 Use of habitat quality to calculate ecosystem credits

The draft BBAM proposed to allow offset requirements to be calculated on the overall habitat of a site for the suite of threatened species predicted to use the site, rather than the habitat value of individual site attributes used by individual species. The intent of this amendment was to provide a simpler, more predictable and transparent approach to determining the number of ecosystem credits required for a development.

A number of submissions supported the proposed amendment because it was believed that it will increase transparency in credit calculations, while others were concerned that removing reliance on habitat values of individual threatened species would reduce the offsets required for a development.

Further analysis of this amendment by OEH revealed different outcomes resulting in the credit requirement increasing in some situations, and reducing in others. However, in the majority of cases, there was no significant difference in the credit requirement for a development.

Another minor amendment that was proposed to improve the transparency of the credit calculators was to apply the 'Tg value' as an offset multiplier, rather than as a denominator. The 'Tg value' represents the ability of a species to respond to improvement in habitat condition from the management actions undertaken at an offset site. This amendment has no material impact on the calculation of offset requirement and was broadly supported in a number of submissions.

4.7.2 Reward for past good management

The draft BBAM proposed to amend the flat 10% bonus to reward past good management of native vegetation to incorporate a more sensitive scoring approach that gave a higher weighting to better condition vegetation. The intent was to provide an incentive to land holders with vegetation in good condition to participate in the scheme.

Submissions expressed concern that this 'reward' for securing vegetation in good condition would result in credits being generated for minimal gain in biodiversity value and therefore weaken the standard of improving or maintaining biodiversity values.

In response, OEH has undertaken further work to develop a provision that considers the potential decline in the condition of good condition vegetation at a proposed biobank site should a management plan not be established on the site. The averted loss estimates the level of risk and potential decline in the condition and habitat quality of a site, should the current and/or permissible land management practises be utilised on the site. This approach mirrors the 'future quality of habitat without offset' score in the *EPBC Act environmental offsets policy*.

4.7.3 Weighting of the credit calculations

The draft BBAM also proposed weighting the site value score and landscape scores at a development site and biobank site. There was little support from the majority of stakeholders for this proposal.

Recommendations:

B15. Use the overall site value score for a vegetation zone as the measure of habitat quality (Equation 1), rather than the habitat value of individual site attributes for a threatened species (section 10.4).

B16. Delete the equation used to calculate the habitat value based on individual site attributes from the BBAM (previously Equation 9).

B17. Assign the 'threatened species response to gain value' (Tg value) as a threatened species offset multiplier when calculating the offset requirement for impacts on threatened species and endangered/critically endangered ecological communities (Appendix 1, Equation 5 and 6).

B18. Replace the 10% bonus for past good management with a provision to assess the 'averted loss' in vegetation condition should a biobanking agreement not be established at a potential biobank site (section 12.3).

4.8 Credit profiles and offsetting rules

The offset rules ensure that the biodiversity lost on development sites is targeted to gains at a biobank site that has the same biodiversity values, or is of a higher conservation priority. This is done by assigning specific credit profiles to biodiversity values. These credit profiles allow impacts on biodiversity at a development site to be offset by improvements in biodiversity of a similar type at a biobank site.

Ecosystem credits currently have five attributes on the credit profile and it is recommended that this is reduced to four attributes by removing two existing attributes and adding a new one. Having several criteria creates a large number of different credit types and correspondingly fewer credit matching options between sites. This fragments the market and reduces credit trading opportunities.

The draft BBAM proposed removing the attributes relating to patch size and the surrounding vegetation cover from the credit profile, and subsequently from the offset rules.

Proponents and ecological consultants supported the view that a reduction in attributes on the credit profile would reduce complexity and improve the ability to trade credits by increasing the credit matching options between sites. Environment groups were concerned that this may lead to inferior outcomes where offset sites contain smaller patches of vegetation, or are located in fragmented landscapes. Although OEH accepts there is the potential for this to occur, the risk is low based on the outcomes of biobank sites to date. Of the 29 approved agreements, all are part of large patches of remnant vegetation.

Further, the draft BBAM proposed broadening the attributes for matching plant community types across formation and expanding the location from where a biobank site could be found to include neighbouring IBRA sub-regions. The attribute on the credit profile that defines the geographic location has been shown to restrict offsetting on potential biobank sites that are located near the development, while other sites several hundred kilometres away satisfy the trading rule.

Although the proposal to include neighbouring IBRA subregions was generally supported, the proposal to allow offsetting across formation was opposed in most submissions, regardless of the stakeholder group. Many of these submissions stated that extending to formation is unnecessary and would achieve inferior conservation outcomes. Many submissions supported the ability to match plant community types within vegetation class, believing this would provide sufficient flexibility and maintain good conservation outcomes. OEH sees merit in this view.

Some stakeholders argued that hollow bearing trees that provide important habitat for threatened species should be offset. OEH recognises that hollow bearing trees provide breeding habitat for many threatened species that are assessed for ecosystem credits and can take a long time to develop. It is proposed to add a new attribute to the credit profile and the offset rules that requires developments to offset the impacts on hollow bearing trees by ensuring that hollow bearing trees are present on the offset site. However, as the effect of including this provision on the BioBanking market requires further consideration, it is recommended scenario testing is undertaken.

Recommendations:

B19. Amend the credit profile and offset rules to remove the attributes for surrounding vegetation cover and patch size (sections 10.4.5 and 10.6).

B20. Amend the offset rules to allow matching the location of a biobank site within any of the IBRA subregions neighbouring the development site (section 10.4.5).

B21. Amend the offset rules to allow matching the ecosystem credits required for a PCT with any PCT within the same vegetation class that has an equal or greater percent cleared value in the major catchment area (section 10.4.5).

A19. Investigate the feasibility of amending the offset rules and credit profile to ensure that the loss of hollow bearing trees impacted by development is contained on a biobank site.

4.9 Supporting biodiversity data sets and tools

Three key databases underpin the operation of the BioBanking Assessment Methodology:

1. Vegetation Information System (VIS) – contains detailed information on plant community types across NSW.
2. Threatened Species Profile Database (TSPD) – provides information on threatened species, populations and ecological communities.
3. Vegetation Benchmark Database – defines the range of natural variability in the condition of plant community types to enable assessors to determine whether vegetation is in or outside that range.

A number of submissions expressed concern with the accuracy, adequacy and workability of data within the databases. In particular, consultants and proponents indicated that inaccurate data undermines stakeholder confidence in BioBanking which in turn influences participation. Suggested improvements included an extensive review of data, with the highest priorities seen as:

- a review of the percent cleared scores for vegetation types
- improved definition of vegetation types
- reallocation of some 'species credit' species to 'ecosystem credit' species
- a review of species Tg values[19], particularly when new information is available.

OEH is currently examining these issues. For example, a single comprehensive baseline vegetation community classification (the plant community type) has been developed and is housed in the integrated, online VIS. This has increased the range of vegetation types available for classification and improved accessibility of information. To support the VIS, OEH has developed the Plant Community Type Identification Tool as a stand-alone aid to identify plant community types in the field. Changes to plant community types classification is evidence based, and moderated by the Plant Community Type Change Control Panel chaired by the NSW Royal Botanic Gardens & Doman Trust. This process will ensure the integrity and quality of the plant community type classification system is maintained.

OEH is working on other improvements to the datasets supporting BioBanking, including a review of the TSPD, starting with the species likely to be triggered more frequently. Further work will continue to be undertaken, as described above, in consultation with key stakeholders.

Recommendation:

A20. Undertake a structured program to improve supporting biodiversity datasets, and commit to regular maintenance.

4.10 BioBanking Credit Calculator

The BioBanking Credit Calculator is a software tool that applies the BBAM to site-specific data and calculates the credits created at a biobank site or required at a development site.

Feedback received throughout the review is that the credit calculator is generally a valuable resource, however, ecological consultants and proponents sought improvements to its functionality and useability. This included fixing timeout issues, improving the capacity to trial scenarios and ensuring data entry is streamlined.

[19] Score given to a threatened species based on its ability to respond to improvements in habitat condition as a result of management actions. Experts scored species based on effectiveness of management actions, life history attributes, natural abundance/rarity and knowledge of species ecology.

OEH recognises that the credit calculator is a key tool that supports the implementation of BioBanking and is committed to its maintenance and improvements. Work has therefore commenced on improving the functionality of the credit calculator.

Recommendation:

A21. Deliver improved functionality of the BioBanking Credit Calculator.

5. Conclusion

The BioBanking review has found that the scheme has been effective in delivering an increasing number of offset sites that will be managed to improve their biodiversity values in perpetuity. Engagement with BioBanking is steadily increasing, however, the review has found there is scope to fine-tune the scheme's framework to ensure the smooth operation of BioBanking as well as increase proponent and landowner participation.

As at the end of July 2014, 10 biobanking statements have been issued and 29 biobanking agreements approved. The biobanking agreements have been established to protect biodiversity of significant value in NSW, including threatened ecological communities and threatened species habitat, and tangible improvements to biodiversity have been observed at these sites.

It has been found that opportunities exist to make improvements to the BBAM to increase participation in BioBanking, improve environmental outcomes, and provide further guidance and certainty to development proponents and biobank site owners. Opportunities also exist to increase consistency between the BBAM and other biodiversity assessment methodologies including the Framework for Biodiversity Assessment, the Environmental Outcomes Assessment Methodology and the Biodiversity Certification Assessment Methodology.

It is therefore recommended that the improvements to the scheme's framework as identified in this review report are accepted (recommendations A1–A12) and that the BBAM be replaced with a revised methodology (recommendations A13–21 and B1–21).