



Technical submission on the Biodiversity Assessment Method and Mapping Method

prepared by

**EDO NSW
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About EDO NSW

EDO NSW is a community legal centre specialising in public interest environmental law. We help people who want to protect the environment through law. Our reputation is built on:

Successful environmental outcomes using the law. With over 25 years' experience in environmental law, EDO NSW has a proven track record in achieving positive environmental outcomes for the community.

Broad environmental expertise. EDO NSW is the acknowledged expert when it comes to the law and how it applies to the environment. We help the community to solve environmental issues by providing legal and scientific advice, community legal education and proposals for better laws.

Independent and accessible services. As a non-government and not-for-profit legal centre, our services are provided without fear or favour. Anyone can contact us to get free initial legal advice about an environmental problem, with many of our services targeted at rural and regional communities.

EDO NSW is part of a national network of centres that help to protect the environment through law in their [states](#).

Submitted to:

Biodiversity Reforms – Have Your Say
Office of Environment & Heritage
PO Box A290
Sydney South
NSW 1232

For further information on this submission, please contact:

Rachel Walmsley, Law Reform Director, EDO NSW
T: 02 9262 6989
E: [rachel.walmsley\[a\]edonsw.org.au](mailto:rachel.walmsley@edonsw.org.au)

EDO NSW

ABN 72 002 880 864
Level 5, 263 Clarence Street
Sydney NSW 2000 AUSTRALIA
E: edonsw@edonsw.org.au
W: www.edonsw.org.au
T: + 61 2 9262 6989
F: + 61 2 9264 2412

EDO NSW and the NSW Government's proposed land management and conservation package

EDO NSW has been making recommendations for strong biodiversity, native vegetation and land management laws since 1995. We were heavily involved in the development of the current Native Vegetation Act between 2002 and 2005.

EDO NSW met with the Independent Biodiversity Legislation Review Panel during their deliberations and produced *A Legal Assessment of NSW Biodiversity Legislation* to assist the panel.

We engaged with representatives of the Office of Environment & Heritage, Department of Primary Industries and Department of Planning during targeted stakeholder consultations prior to the public exhibition process. We raised a number of key concerns and made recommendations in these meetings based on our extensive expertise in NSW environmental law.

Unfortunately none of these fundamental concerns or recommendations were addressed in the package developed for public consultation.

During the public consultation period we have published our expert analysis on the reforms (see: http://www.edonsw.org.au/biodiversity_legislation_review). We have compared the strengths and weaknesses of current laws with strengths and weaknesses of the proposed laws.

Our conclusion is that the proposed laws are a retrograde step for NSW biodiversity and land management. While the proposed investment private land conservation is welcome, once this money runs out, we will be left with weak laws that offer no real protection for our unique threatened species and ecological communities and will facilitate ongoing decline in biodiversity. Consequently, we cannot support the proposed package.

Through a series of workshops, seminars and forums, we have spoken to local communities, Landcare members, Local Land Services officers, local councils, ecological consultants, private land conservation agreement holders, Aboriginal people, conservationists, wildlife carers, and private individuals through our advice line. Areas covered include: Hunter, Greater Sydney, North Coast, Northern Tablelands and Central West. We discussed concerns with over 600 people. With the exception of representatives of the NSW Farmers Association, no-one we spoke to thought the proposed laws were an improvement on current laws, and almost all participants were seriously concerned at the implications of the new regime for biodiversity.

In addition to the analysis on our website, we make the following submissions.

- EDO NSW submission on the Local Land Services Amendment Bill 2016
- EDO NSW submission on the Biodiversity Conservation Bill 2016
- EDO NSW Technical submission on the Biodiversity Assessment Method and Mapping Method.

This is the third of our three submissions, and addresses technical issues relevant to both the Local Land Services Amendment Bill and the Biodiversity Conservation Bill.

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Executive Summary

EDO NSW is a community legal centre specialising in public interest environmental law. We welcome the opportunity to provide comment on the NSW Government's proposed laws for land management and biodiversity conservation.

This is the third of three submissions by EDO NSW.

This technical submission identifies issues and concerns with proposed tools and schemes that are relevant to both the Local Land Services Amendment Bill and the Biodiversity Conservation Bill, namely:

1. The new Biodiversity Assessment Method
2. Offsets payment calculator
3. The proposed regulatory mapping method
4. Accreditation of experts using the new tools
5. Monitoring, data and environmental accounting

This submission has been compiled with assistance from our Expert Register. We also thank OEH for the opportunity to attend briefings and workshops on the proposed methods.

Biodiversity Assessment Method

The proposed reforms aim to establish a single scientific method for assessing impacts at a development site and calculating how many biodiversity offset credits would be needed to offset that impact.

Of all the offset methodologies developed to date (including the Environmental Outcomes Assessment Methodology under the current *Native Vegetation Act*, biobanking and biocertification methods under the current *Threatened Species Conservation Act*, and the Commonwealth offsets standard under the *Environment Protection and Biodiversity Conservation Act (EPBC Act)*), the NSW Government has opted to largely reproduce the tool with arguably the weakest offset standards, namely the NSW Offsets Policy for Major Projects.

Therefore, under the new biodiversity assessment method (or **BAM**) direct 'like for like' offsetting requirements are relaxed and can be circumvented. For example offsets do not need to be of the same species or vegetation type as the one being impacted. The new option to pay money in lieu of an actual offset will result in net loss of certain threatened species and communities - including loss of local threatened populations. Offset areas and set asides may be cleared and offset again later on rather than actually protected in perpetuity.

Part 1 of this submission addresses key deficiencies of the proposed BAM including:

- The lack of red lights, as significant and irreversible as yet undefined;
- BAM thresholds are also unclear and could result in large areas of clearing not being assessed by the BAM, including in Endangered Ecological Communities (**EECs**);
- Important information is missing;
- There are significant changes (reductions) in number of credits generated, and it is not yet clear why some offset ratios appear to have been reduced;
- The BAM incorporates the highly criticised swamp offset policy;
- There are no mandatory salinity, soil, water assessment modules;
- The BAM allows expanded use of like for like variations (ie, indirect offsets) and supplementary measures;

- There is no guarantee Conservation Trust will actually be able to offset as required; and,
- Credit for mine rehabilitation is available when proponents should already be required to do this.

Part 2 notes concerns with the proposed **Offsets payment calculator**. We will be providing further input on this tool directly following an upcoming briefing.

Mapping and data

Under the new regime, appropriate protection of critically endangered animals, plants or ecological communities is wholly dependent adequate mapping (i.e. areas that have not been mapped are not automatically regulated). Accuracy of mapping therefore underpins the success or failure of the whole regime. The effectiveness of the Map therefore requires comprehensive, ecologically defensible mapping which has not been completed to date. This undermines the ability for the Map to function as an appropriate regulatory tool. The use of annual reviews and discretionary reviews available to the Chief Executive of OEH will be vital to ensure adequate protection for threatened species when new information becomes available.

Part 3 identifies concerns with the proposed mapping method including:

- The mapping effectively legalises any illegal clearing done since 1990 that hasn't been subject to prosecution.
- The decision making hierarchy is the inverse to what it should be. The mapping process should identify what vegetation existed in 1990, then work out what has been legally cleared since and then work out whether areas fall into the blue or yellow category (ie, regulated or unregulated land).
- EECs, critical habitat under the EPBC Act and Ramsar wetlands, amongst others, are not considered excluded areas.
- The accuracy statistics for categorisation of different vegetation types that the mapping technique does not adequately detect arid shrublands, grasslands or (through LIDAR) freshwater wetlands. It will not be good at identifying paddock trees.
- And finally, the basis for the mapping designed internally by OEH hasn't been peer reviewed/published so not independently quality assured.

Accreditation

Part 4 acknowledges the proposed accreditation scheme for consultants undertaking BAM assessments. The proposed scheme is similar to the current accreditation scheme for biobanking assessors. We welcome accreditation of assessors, but it is unclear what the audit regime will be, and there is no apparent ability for community to raise concerns regarding poor performance.

Monitoring, data and environmental accounts

Part 5 identifies the need for comprehensive data, monitoring, targets and environmental accounting. This was recommended by the Independent Biodiversity Legislation Review Panel, and is essential to determine the success or failure of the proposed regime.

This submission is to be read in conjunction with our:

- Submission on the Local Land Services Amendment Bill 2016
- Submission on the Biodiversity Conservation Bill 2016

Summary of Recommendations

Biodiversity Assessment Method

EDO NSW does not support the implementation of the proposed BAM. However, if the BAM is to be adopted, the following changes must be made:

- The BAM must include a clear 'no net loss or better' environmental standard.
- Appropriate 'significant *or* irreversible' impacts should be defined and produce a 'red light' for all developments, including major projects. These should be clearly stated in the regulation and the BAM. To accurately reflect the definition of ecologically sustainable development, the test must be serious "or" irreversible impacts, not "and".
- The need to avoid and minimise environmental impacts must be mandatory and projects should be rejected where the proponent does not adequately follow the guidance provided.
- Strict like for like requirements must be imposed on any offsetting.
- No discounting of offsets should be permitted.
- The assessment and offsetting methodology should consider a full suite of environmental factors including salinity, soil, and water assessments.
- Indirect impacts should not be considered through the BAM but if they are, any offset requirements should be based on the assumption that the development will completely destroy all affected vegetation communities and associated species, and these communities will be unable to be rehabilitated.
- Climate change must be explicitly considered.
- No credit should be available for mine rehabilitation as the original project conditions should require comprehensive rehabilitation of mine sites.
- Impacts on important landscape features should trigger additional offset requirements
- The BAM should not reduce the offset credit requirements due to purely technical change in methodology that is not ecologically justified, as this will result in poorer environmental outcomes.
- The BAM should be applied for any clearing above 0.5ha, or any clearing that will affect a threatened species or ecological community, or any clearing on land on the thresholds value map.
- The streamlined assessment module should be modified to ensure adequate protection of paddock trees and small areas.
- The proposed sensitivity classes should provide greater protection for species and ecological communities.
- Impact thresholds classes should provide greater protection for species and ecological communities.
- Measures of averted loss should not embed a presumption that high quality vegetation on potential stewardship sites that has been protected and appropriately managed in the past, can and will be cleared in the immediate future.
- Further consultation is required on the proposed intrinsic rate of gain.
- Large trees should be used as surrogate for hollows subject to a recognition that hollows will form at different sizes for different species making it will be necessary for this metric to be specific to species and IBRA region. Hollows should be required to be found on a stewardship site when they are being destroyed on a development site.
- The term 'reasonable' as it is used in the BAM requires further definition.
- Monitoring of all offset sites should be required as a condition of involvement in the offsetting program, not as an action that generates credits.
- Adaptive management should be applied using scientific principles, not used as a means to allow unassessed impacts.
- Cumulative impacts should be given further consideration in the BAM.

Offsets payment calculator

Establishing a true offset market will require the implementation of the recommendations made above, particularly in relation to ensure that true 'red lights' exist on clearing. In addition to these changes, the offsets payment calculator should be adjusted to:

- Focus on a costs model in the short-term. The proposed cut off of 5 trades for ecosystems and 1 trade for species as an indicator of market price is not acceptable.
- Add a premium that reflects the net marginal damage caused by land clearance.

Native Vegetation Regulatory Map: Map Method Statement

EDO NSW fundamentally disagrees with the approach that has been taken to develop the Native Vegetation Regulatory Map (the Map). The mapping process should be changed to:

- Identify those areas that had been legally cleared in 1990 as Category 1 (blue) and then only map other areas as Category 1 where it can be shown that clearing has subsequently been conducted legally either under the Native Vegetation Act or through a development approval.
- Include an additional protected and sensitive areas category (Category 4), or at a minimum the current excluded land category should be expanded to cover existing protected areas (Category 3).
- Incorporate ground-truthed comprehensive, ecologically defensible mapping of threatened species and ecological communities and include these areas in either excluded (Category 3 as proposed) or regulated (Category 2) lands, as described in this submission.
- Ensure that annual and discretionary reviews only re-classify land as Category 1 where it has been demonstrated that land clearing has been undertaken legally. Discretionary reviews should be used to ensure that new information on threatened species and ecological communities is incorporated into mapping layers as quickly as possible.

Accreditation

- EDO NSW has long argued the need for an appropriate ecological consultant accreditation system. While the existing BioBanking model may form an appropriate basis for such a scheme, further refinement, particularly in the area of assessment and review is necessary. Appropriate implementation of the BAM will require skills in botany, ecology and mapping and any accreditation scheme must ensure that each BAM is completed by an individual or individuals with the appropriate range of skills.
- We recommend that further targeted consultation occur with bodies such as ECA and EIANZ to determine the integrity, transparency and accountability requirements for the necessary scheme.
- In order to increase objectivity, independent assessors should be allocated by OEHS from a pool of accredited assessors to work on proposed projects.

Monitoring, data and environmental accounts

- Adopt a set of clear, ambitious, state-wide environmental and natural resource management (NRM) goals and targets. These should be translated and given effect in regional plans, supported by NRM agencies.
- Invest in a program to identify and gather data on 'ecosystem services' (benefits to humans provided by nature) – such as a State Ecosystems Assessment – and report on and raise awareness of the importance of ecosystem services for NSW.
- Establish state and regional 'environmental accounts' to assess progress against ecological baselines and targets. These accounts should assess the extent, condition and trends in environmental assets including biodiversity, native vegetation, carbon storage, soil and water quality.

Part 1 - Biodiversity Assessment Method

The proposed regime is highly dependent on an offsets market delivering environmental outcomes. The materials on public exhibition indicate that this is a key method of facilitating ecologically sustainable development (**ESD**). EDO NSW has published analysis on our website that demonstrates ways in which the proposed regime fails to implement the recognised principles of ESD.¹ We submit that offsets should be a measure of last resort, especially given the evidence that offsetting often fails to deliver its stated outcomes and the delivery of environmental outcomes is highly uncertain.² The BAM should therefore contain the ecologically necessary limits to prevent extinctions and allow like for like offsets only when opportunities to avoid and minimise impacts have been genuinely avoided.

Purpose and context

The stated goal of the proposed Biodiversity Assessment Method (**BAM**) is to address Recommendation 12 of the Independent Biodiversity Legislation Review which called for “a single, scientifically-based, transparent, publicly-available and independently reviewed method for assessing the biodiversity and other environmental impacts of all development in NSW.” In EDO NSW’s view, the BAM fails to meet this goal. EDO NSW has significant concerns with the BAM and does not support the repeal of the current BioBanking Assessment Methodology (**BBAM**) or Environmental Outcomes Assessment Methodology (**EOAM**) unless environmental protections in the BAM are significantly strengthened.

Before providing the rationale for these concerns, we note that, as with many aspects of the proposed reforms, important information on how the BAM will function is missing from the public consultation material. Without this information it is not possible to understand the full extent of the proposed changes. It also means that a final BAM has not been subject to peer review and cannot claim appropriate scientific rigour. Crucial missing information includes:

- The definition of significant and irreversible impacts;
- The detail of the proposed threshold values map, also known as the sensitive values map;
- Thresholds which will decide whether the BAM must be applied;
- Information demonstrating how the proposed BAM aligns with the BBAM and the scientific justification for most of the proposed changes to the BAM;³
- Offset multipliers for each threat status group;
- Proposals to allow the discounting of offsets; and
- Any auditing and assessment processes.

It is unclear how the BAM will interact with the broader planning regime. For example, the NSW Government is currently proposing to expand matters that will be considered complying development. Will this mean that areas that would otherwise be captured by the BAM will be excluded from assessment? The 10/50 Vegetation Clearing Code of Practice allows for significant areas of clearing once structures have been built. Will the BAM require consideration of the 10/50 area of influence for new developments (noting that section 8.1.2.4 of the BAM flags that bushfire must be considered as part of the avoid and minimise requirements). The sensitive values/threshold values map is yet to be determined. Will this

¹ Available at: http://www.edonsw.org.au/the_2016_nsw_biodiversity_reforms_6_things_you_need_to_know

² Maron et al (2012) Faustian bargains? Restoration realities in the context of biodiversity offset policies
Biological Conservation 155: 141-148reference

³ We note that further detail on some of these issues was provided at an Office of Environment and Heritage Technical Workshop on 14 June 2016, however it was clear from this workshop that a large number of decisions about the key parameters in the BAM remain unresolved.

include areas identified as high conservation value land through the regional planning processes or areas that are identified as high conservation value by local government?

Concerns with policy settings

The BAM proposes a number of significant changes to the detailed offset assessment method compared to both the BBAM and the EOAM. Even before considering this level of detail, EDO NSW has a number of concerns relating to the policy settings that have been used to inform these changes. Many of the comments provided here have been made in response to previous iterations of the offset methodology⁴ and it is highly concerning that these problems have not been addressed in the proposed BAM.

Lack of environmental standard

Any change from the EOAM to the BAM will remove the existing requirement to 'maintain or improve environmental outcomes', and there is no proposal to replace this test with a clear environmental standard. In consequence, there is no objective standard by which successful application of the BAM can be measured.

As noted in our submission on the Local Land Services (**LLS**) Amendment Bill, implementation of the ESD principle of using market mechanisms requires a clear goal, targets and baselines. We recommend that all clearing should be subject to a legislative 'no net loss or better' test.⁵ No net loss should be defined based on the current state of biological diversity in NSW and with the need for any offsetting to include a true like for like comparison (i.e. individual species and Plant Community Types). Implementation of such a baseline could be driven by the regional environmental accounting framework discussed in Part 5 of this submission. This approach will improve equity, consistency and coherence across environmental decision making. Further there is a need for clear timeframes for offsetting milestones including the implementation of in perpetuity protection and the achievement of environment outcomes. For example, the proposed standard that a Plant Community Type (PCT) is "strongly trending towards becoming a recognisable PCT" is not an acceptable measure (Section 12.14.1.5).

Removal of red lights

A key function of the EOAM is that it identifies 'red lights' or clearing that will not meet the test of maintaining or improving environmental outcomes. Unlike later iterations of the tool (including offsetting for major projects), the EOAM provides clear guidance to land managers and project proponents on when clearing is unacceptable. Implementation of the BAM as proposed would remove all red lights because even (as yet undefined) significant and irreversible impacts will be approvable subject to further negotiation. In this context, it is particularly concerning that the consent authority decides if an impact is likely to be significant and irreversible (Section 9.2.1.2), rather than assessing this against an objective test of environmental impact. This approach will lead to inadequate and uncertain environmental protection with no clear guidance for project proponents on what, if any, scale or location of impact would lead to a project being rejected due to its environmental impacts.

⁴ In particular see *A legal assessment of NSW biodiversity legislation: A report prepared for the Independent Biodiversity Legislation Review Panel* available at: <https://d3n8a8pro7vhm.cloudfront.net/edonsw/pages/1712/attachments/original/1412815355/ELOLegalAssmntNSWBiodivLegEDO.pdf?1412815355> and *Submission on the Draft NSW Biodiversity Offsets Policy for Major Projects* available at:

http://d3n8a8pro7vhm.cloudfront.net/edonsw/pages/1455/attachments/original/1400219519/140516_NSW_Biodiversity_Offsets_Policy_for_Major_projects_-_EDO_NSW_Submission.pdf?1400219519.

⁵ For more detailed discussion see: Maron et al (2016) Taming a Wicked Problem: Resolving Controversies in Biodiversity Offsetting. *BioScience Advance Access* published April 31, 2016.

We recommend that a clear statement of what constitutes **serious or irreversible impacts** should be set out in the BAM and the regulation. To accurately reflect the ESD definition, the test must be serious “or” irreversible impacts, not “and”. The list of relevant impacts should include:

- Any adverse effect on the following:
 - Critically endangered species and ecological communities (i.e. those at extreme risk of extinction);
 - Areas of Outstanding Biodiversity Value; and
 - Nationally and Internationally Important Wetlands (i.e. Ramsar wetlands and/or those listed in Commonwealth Directory of Important Wetlands).
- Any significant effect (as determined by a species impact statement, or equivalent BAM process) on the following:
 - Endangered species and ecological communities, including Vulnerable species and ecological communities; and
 - Important rivers and biodiversity corridors.

In the absence of a dedicated legislative framework for Aboriginal culture and heritage, consideration must also be given to how areas of culturally significant biodiversity could be protected, in full consultation with Aboriginal peoples of NSW.

Avoid and minimise impacts

We welcome the upfront focus on the need to avoid and minimise impacts but are concerned by the lack of consequences for projects that do not adequately do this. In fact, Section 8.1.1.3 ultimately only requires the provision of a justification in the BDAR or BCAR if the proponent does not propose to avoid or minimise impacts. While there are “guidelines for avoiding and minimising impacts on other biodiversity values during project planning” (Section 8.1.3), these guidelines do not consider issues such as salinity, soil impacts, hydrology and hydrogeology, noise, light, dust, climate change, or habitat overcrowding as a result of displacement. Some of these issues are considered as indirect impacts (Section 8.3.2) but again there is no upfront requirement to avoid or minimise them. It is also unclear why further detail was provided on the particular biodiversity values in Section 8.2.3 when there are other projects, such as coal seam gas projects, which will have significant environmental affects that will not be adequately considered by the BAM.

Removal of like for like requirements

While the relevant regulation is not yet available, the BAM relaxes the offsetting rules to such an extent that the concept of like for like becomes almost meaningless. It can be expected that significant biological diversity will be lost and significant areas of the state will have vegetation communities that are under-represented in the protected areas/private land conservation network. This loss will be driven by the offsetting rules that contemplate offsetting across vegetation classes and formations and/or between IBRA sub-regions, as described in the consultation material. For example, the case study of the Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion EEC states that it is associated with PCTs from six formations/sub formations and 11 vegetation classes (Section 10.5.3). On this issue, we agree with the October 2015 independent review of the BAM⁶ that stated:

⁶ Gibbons, P. and Eyre, T. (2015) *Draft Independent review of the Biodiversity Assessment Method: A consultancy for the Office of Environment and Heritage for the NSW Government* October 2015

“(w)e consider that the metrics used to calculate Ecosystem credits, combined with liberal offsetting rules, are likely to encourage offsets in relatively intact areas of NSW, rather than degraded areas. This could result in relatively modest marginal gains in biodiversity relative to existing biodiversity.”

Similarly, variations that allow offsetting for fauna across Order or life form for flora will fail to halt or slow the loss of biodiversity across the state.

EDO NSW is also concerned that the ability to use like for like variations are based on undefined ‘reasonable steps’. Again, there is no certainty for land managers or project proponents and no clarity for decision makers on what will constitute a reasonable step. Consequently, the full extent of the biodiversity loss that will be permitted by variations cannot be known. A consent authority should be required to reject a project where suitable offsets cannot be found. Instead, in the BAM the inability to source suitable offsets simply enlivens the ability to use biodiversity conservation actions. For the vast majority of species and communities, biodiversity conservation actions are not a suitable replacement for offsets and should not be considered an appropriate alternative. Of further concern is the fact that the Environment Minister will also have the ability to allow biodiversity conservation actions in lieu of offsets without first considering the availability of offsets (Section 10.5.8).

The independent review (October 2015) noted and we agree that:

“Offset policies work by imposing a constraint on impacts (typically no net loss) that, in turn, places a price on impacts that is equivalent with the cost of offsetting those impacts. This provides a price signal that incentivises greater avoidance of impacts as these become more difficult to offset and creates a market that identifies when impacts cannot be offset—and therefore are not acceptable. Because the proposed supplementary measures and allowable variation in the offset rules within Section 10.5 are so far-reaching, the price of offsetting is unlikely to reflect the difficulty with which an impact can be offset which, in turn, will reduce the incentive for a proponent to avoid impacts on biodiversity that is difficult to, or cannot be, offset.”

Discounting of offsets

As noted in our submission on the LLS Amendment Bill, LLS officers do not currently have expertise as planners, economists, sociologists, as well as environmental scientists that will be necessary to undertake accurate triple bottom line assessment of impacts.

The BAM states that existing conservation obligations and the process for discounting conservation will be established by the regulation (Section 12.13.1.2). Discounting is contrary to the ESD principle that biodiversity conservation should be a fundamental consideration, and the proposal to allow ‘discounting’ of offsets requirements (see Biodiversity Conservation Bill 7.15(4)) should be rejected. Given the strong weighting given to social and economic considerations in the broader decision making process, already weak conservation outcomes should not be further compromised by the ability to discount offset requirements.

Insufficient consideration of environmental impacts

EDO NSW is extremely concerned about proposal to remove EOAM modules including salinity, soil, and water assessments and rely solely on the vegetation assessment model of the BAM. The offset methodology effectively builds from an inappropriate vegetation mapping system and relies on vegetation assessment with associated predictive fauna species lists. (Concerns with the mapping method are discussed below in Part 3 of this submission and in our submission on the LLS Amendment Bill). As has been raised by other

submissions to the legislative reforms, Weinberg *et al.* (2008) demonstrated that desktop biodiversity toolkits that rely on a range of key vegetation and landscape attributes are good at predicting some fauna assemblages (for example, bats and non-woodland-dependent birds do have a strong relationship to vegetation communities), but not others. Consequently, the proposed mapping and BAM system cannot be relied on to accurately predict the structure of all fauna communities, nor the presence of threatened species. Further requirements for fauna surveys, and salinity, soil, and water assessments should be included in either the BAM or the broader decision making framework.

Indirect impacts

Despite the insufficient consideration of environmental impacts outlined above, the BAM proposes to also assess the indirect impacts of projects. The method appears to be based on a broader application of the highly criticised Swamp Offset Policy. As stated in our submission to that policy, EDO NSW does not support the Swamps Offset Policy.⁷ Our objections are based on specific elements of the Policy itself, flaws in the underlying offsets policy framework and the latest scientific evidence, which indicates that swamps cannot be rehabilitated. As submitted previously, we recommend that the Government (i) create 'red flag' areas which prohibit mining directly beneath and close to swamps, and (ii) require companies to ensure mine layouts avoid impacting these areas. The Swamps Offset Policy is integrated into the BAM in Section 8.2.3.2. The cumulative impact reference in this section provides an example of poor integration of indirect impacts. In this case, consideration of cumulative impact excludes previous mining impacts and the groundwater drawdown impact area from previous and existing mining projects (i.e. those projects not directly underneath a water dependent plant community but affecting that community through drawdown).

Indirect impacts should not be considered through the BAM but if they are, any offset requirements for indirect impacts should be based on the assumption that the development will completely destroy all affected vegetation communities and associated species and these communities will be unable to be rehabilitated.

Climate change

Biodiversity laws and related decisions must explicitly consider and plan for climate change impacts, using adaptation plans, buffers and adaptive management to enhance ecosystem resilience. There is no consideration of climate change in the BAM. Consideration of climate change impacts is discussed further in our **Submission on the Biodiversity Conservation Bill**.

Credit for mine rehabilitation

Community expectation is that mining companies will be responsible for rehabilitating areas damaged through the mining process. This is something that mining companies consistently commit to as part of their project justification in environmental impact assessments. Appropriate project approval conditions that require mining companies to meet these standards means no biodiversity credits should be available. The proposed BAM (particularly Section 12.14.1.10 which gives the Minister discretion to determine when completion/ relinquishment criteria has been met) creates an incentive for mining companies to undertake poor rehabilitation in the first instance and only undertake an adequate standard of rehabilitation where there will be a financial reward through the offsetting system. In our view, this approach constitutes double dipping and should not be allowed.

⁷ EDO NSW Submission on Stage 1 of the Integrated Mining Policy prepared 9 July 2015, available at http://www.edonsw.org.au/integrated_mining_policy_submissions

Concerns with key decisions

Given our significant concerns with the overall approach to biodiversity conservation as envisaged by the BAM and the fact that the final BAM is not currently available, we have limited our comments on the detail of the BAM to key decisions in the BAM that we believe have the potential to significantly weaken environmental outcomes and should be reconsidered if use of the BAM proceeds.

Landscape features

We note that the proposed BAM, Biodiversity Development Assessment Report (**BDAR**) and Biodiversity Certification Assessment Report (**BCAR**) maintain the BBAM requirement to provide information on NSW landscape features, rivers, streams and estuaries, local and important wetlands, connectivity features, areas of geological significance or soil hazard features, and areas protected under State Environmental Planning Policies. However, recording these features does not translate to any impact on credit requirements. Given the move away from assessment of a broad suite of environmental assessment features and the reduced focus on fauna surveys, the fact that clearing in these environment no longer requires additional compensation is highly concerning. Further, the removal of consideration of connectivity fails to ensure adequate consideration of vegetation at the landscape scale as recommended by the Independent Biodiversity Legislation Review Panel (**Review Panel**).

Credit reductions

EDO NSW has received independent expert advice that the draft BAM calculator consistently generates the need to obtain fewer credits to offset impacts in a development area than the BBAM calculator. In light of other changes in the BAM, this is highly problematic, even if stewardship sites also generate fewer credits. This reduction in credits occurs in a context where offsets are required on fewer occasions, and the credit ratio between development and offset is being decreased. There is also uncertainty around the final process that will be used to generate credits on a stewardship site. We are extremely concerned that offsets obligations can now be entirely discharged by paying into an offset fund or undertaking biodiversity conservation actions. The combination of these factors will lead to a significant reduction in the scale of on-ground offsets that are likely to be required for an individual development and therefore the level of protection afforded to biodiversity in NSW through the BAM.

At the OEH technical workshop on 14 June 2016, it was noted that a number of credit classes, such as those for genetically distinct populations, will be removed from the BAM. This is a highly concerning reflection of the approach taking in the Saving Our Species program where genetic distinctiveness, recognised as a key component of biological diversity, is being ignored in the NSW approach to managing biodiversity.⁸

BAM thresholds

Key information about BAM thresholds is not available and will be in a future regulation. EDO NSW does not support the use of different minimum lot sizes as a guide for the application of the BAM threshold as flagged in the online submission guide. The activation of a threshold based on the size of a property is not biologically meaningful, as it fails to relate to the environmental features that may require protection. As such, EDO NSW does not support any of the BAM threshold criteria and believes that if it is to be used, the BAM

⁸ As noted in our submission on the Biodiversity Conservation Bill, genetic diversity is not part of the definition in the new legislation as “biological diversity” is not defined. We recommend carrying over the current definition.

should be applied for any clearing above 0.5ha, or any clearing that will affect a threatened species or ecological community, or any clearing on land on the thresholds value map.

Streamlined assessment module

EDO NSW is concerned about a number of the assumptions underlying the streamlined assessment module. If a streamlined assessment for small areas of clearing is maintained, the proposed area limit for application should be less than 2ha for all lot sizes. It is also unclear if there are any effective limits on the use of streamlined modules. Without clearly communicated enforceable limits, a significant amount of clearing could be conducted under this assessment framework.

The streamlined assessment fails to recognise the importance of paddock trees in the landscape, particularly for maintaining fauna species richness and diversity. The removal of paddock trees permitted under the streamlined assessment is likely to remove habitat essential to fauna, creating barriers to dispersal and reduction in population genetics. The definition of paddock trees applied in Appendix 1 greatly expands what can be cleared without approval and in fact leaves the definition entirely open to individual interpretation. For example, trees located on Category 2 land entirely surrounded by Category 1 land, provides no information on what scale this assessment should be undertaken. The definition includes 3 trees, not single paddock trees and no offset is required for trees with negligible biodiversity value which is largely undefined but includes trees that are <20cm DBHOB, regardless of the species or geographical area. The module does not define “paddock trees with negligible biodiversity value” (p94). The system fails to recognise the importance of recruitment of new paddock trees by allowing all small trees to be removed. There is also no offset required for properties with greater than 70% vegetation cover, regardless of the Class of paddock trees.

Sensitivity classes

Important environmental features are undervalued in *Table 10: The proposed sensitivity classes that are used to determine the level of biodiversity concern for the species as shown in the Threatened Species Profile Database*. As these sensitivity classes will play a key role in determining the necessary offsets, they must accurately reflect the likelihood of success of offsets. Given that research to date shows significant concerns with the effectiveness of protecting biodiversity through offsets,⁹ these sensitivity classes should use a precautionary approach. EDO NSW submits that those categories currently in the ‘high sensitivity class’ should be included in the ‘very high sensitivity class’. To better reflect the importance of tree hollows for threatened species the measure of ‘long time until ecological benefit’ should also be added to the ‘very high sensitivity’ class for flora species. ‘High sensitivity’ measures should include a limited ability to control threats, short dispersal distances, species dependent on other slow developing attributes and where an entity has a low reproductive rate for fauna species and their habitats, low seed bank persistence, low quality of seed and long age to flowering for flora species.

Impact thresholds

EDO NSW has significant concerns with *Table 13: Summary of impact thresholds for native vegetation and threatened species* and the thresholds this creates for the use of offsetting. As stated above, there must be a comprehensive list of serious and irreversible impacts that mean consent cannot be granted if, on an objective scientific assessment, this impact will occur as a result of a proposed project, including for major projects.

⁹ Maron et al (2012) Faustian bargains? Restoration realities in the context of biodiversity offset policies *Biological Conservation* 155: 141-148.

Like for like offsets should be required for any impact on CEEC, EEC or vulnerable ecological communities and for any PCT group that is threatened species habitat, regardless of the vegetation condition. It is inappropriate to avoid offsetting threatened EECs and species habitat just because it is currently degraded, and it produces an incentive for further degradation of existing areas of threatened ecological communities. PCT impacts should be considered against equivalent PCT's, not PCT group.

Offsets should be required for all threatened flora species. Further, ensuring that all threatened species habitat is offset is particularly important for those species which are known to regularly inhabit what would otherwise be considered degraded environments, such as Green and Golden Bell Frog. Protecting threatened species habitat regardless of its current degradation status will become increasingly important as species adapt to and utilise previously developed areas.

While we are not currently recommending that offsets should be provided for vegetation communities that are not threatened, or that do not form threatened species habitat, the failure to require offsets for these areas does create a risk that future development pressure will lead to these communities becoming threatened. As such, we strongly recommend that if the biodiversity reforms are enacted, future BAM modules should consider how to avoid degradation of vegetation communities to the extent that they become threatened. Consideration of such vegetation is also important from a climate change perspective.

Averted loss

EDO NSW is extremely concerned about the use of averted loss as part of the measurement of gain at a stewardship site. The use of averted loss embeds a presumption that high quality vegetation that has been protected and appropriately managed by landholders in the past, can and will be cleared in the immediate future. No information is provided to support that proposition. This concern was noted by the peer review December 2015:

“(w)e cannot accept that tree cover in NSW, for example (estimated as 0.25-0.5 rate of loss per annum), will be completely lost within 2-7 years on high-risk land and 4-16 years on low-risk land (depending on the methodology used to calculate annual probability of loss). We quickly calculated that the annual rate of tree-cover loss in NSW (rural clearing only—based on OEH SLATS data from 1989-2011 and the State of Forest Report for total tree cover in NSW) has been approximately 0.0006 per annum (regardless of method used) and previous research on paddock trees in NSW (which decline at a faster rate than intact vegetation) indicate an annual rate of loss around 0.013 per annum (data from Ozolins et al. (2001)).”¹⁰

Measures of averted loss should not embed a presumption that high quality vegetation that has been protected and appropriately managed in the past, can and will be cleared in the immediate future.

Intrinsic rate of gain

Similarly there is no information available to support the proposed intrinsic rate of increase for richness, cover and function attributes (Appendix 7), nor is the full suite of rates of increase available. The consultation note states that the existing proposals have been developed by a small pool of people within OEH. The existing rates of increase refer to particular formations with no recognition that this is likely to change for different geographical

¹⁰ Gibbons, P. and Eyre, T. (2016) *Independent review of the Biodiversity Assessment Method (v0.5 Dec 2015) A consultancy for the Office of Environment and Heritage for the NSW Government* January 2016

areas and environmental conditions. Further consultation is required on the proposed intrinsic rate of gain.

Tree hollows

EDO NSW clients regularly express concern that the existence of tree hollows in development areas is underestimated during environmental assessment. In this context, we support the use of large trees as surrogate for hollows (section 5.4.3.20), subject to a recognition that hollows will form at different sizes for different species making it will be necessary for this metric to be specific to species and IBRA region. EDO NSW supports a requirement for hollows to be found on a stewardship site when they are being destroyed on a development site.

Reasonable measures

EDO NSW is concerned about repeated references to the need to use “reasonable” measures to achieve environmental protections (sections 8.3.3.3, 10.2.1.1, 10.5.4.4, 10.5.7.4). As noted previously, no definition for “reasonable” is provided leaving what constitutes a reasonable measure entirely open to the decision maker. Given the broad use of this term and the importance it will play in determining whether any environmental outcomes are achieved, it should be clear to all stakeholders what will be considered reasonable.

Monitoring

While EDO NSW strongly supports appropriate monitoring, the need for monitoring is a prerequisite to appropriate management. It does not provide an improved environmental outcome in and of itself and should be seen as a compulsory feature of any stewardship agreement, not something that generates credits (Table 16). As has been flagged in submissions to previous changes to the offset methodology, it is extremely concerning that the assumptions in relation to environmental gain to stewardship sites as a result of management actions remains untested. The lack of adequate monitoring of previous offsets means the BAM will weaken environmental protections for unproven environmental outcomes. The need for comprehensive monitoring is discussed below in Part 5 of this submission.

Adaptive management

EDO NSW supports the use of adaptive management but believes that in this context it has been misapplied. Section 8.4 of the BAM includes no maximum limit to impact, merely a need to reduce or eliminate impacts when a certain threshold is passed. As stated by Preston, C.J. of the Land and Environment Court:¹¹

“In adaptive management the goal to be achieved is set, so there is no uncertainty as to the outcome and conditions requiring adaptive management do not lack certainty, but rather they establish a regime which would permit changes, within defined parameters, to the way the outcome is achieved.”

The BAM should establish a method by which there is a clear statement of the maximum allowable environmental impact. Development should cease if these impacts are exceeded. At that point, a proponent should be required to undertake additional actions to rectify unforeseen impacts. Significant unassessed and unapproved harm could be permitted if

¹¹ *Newcastle & Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Limited* [2010] NSWLEC 48

adaptive management is implemented as proposed. This concern was also highlighted by the November 2015 independent review.¹²

Cumulative impacts

Cumulative impacts are given inadequate consideration in the BAM. While Section 8.2.1.4 states: “*The proponent must assess the cumulative impacts on biodiversity values caused by the project in combination with other projects in the IBRA subregion*” this does not consider cumulative impacts on widespread ecological communities or migratory species. It is also unclear how cumulative impact will be quantified when there is no provision for making BDAR and BCAR information publicly available. Cumulative losses of local populations rapidly lead to regional extinctions and ultimately to the loss of a species.

Part 2: Offsets Payment Calculator

EDO NSW has received expert economic advice that, as it is currently proposed, the offsets payment calculator does not adequately reflect the environmental damage caused by land clearing. We would like to thank Neil Perry for his invaluable expertise and input.

In a theoretical environmental offset market such as where a polluter purchases a permit created when someone else reduces pollution, the permit price reflects the marginal damages of emissions. This is because the number of permits in the system reflects the marginal damages of emissions. In economic terms, the number of pollution permits in the system is determined by the intersection of the aggregate marginal abatement cost curve and marginal damages curve. Thus, if marginal damages increase, the optimal quantity of pollution falls and therefore the number of permits falls. In response, the price of permits will increase. This increase provides appropriate incentives to polluters to reduce their pollution.

In contrast, the proposed biodiversity offset payments calculator uses only the marginal abatement costs to determine the price of offsets – that is, it uses management costs and the opportunity cost of land. This is a consequence of the fact that there is effectively no limit on land clearance and no environmental standard, such as no net loss, which any approved clearing must meet. There is no attempt to limit land clearance to the optimal amount as determined by the net marginal benefits of land clearance (net of offsets) and the net marginal costs or damages of land clearance (net of offsets). This approach appears to incorrectly assume that there are no damages from clearing when that clearing is offset by protection of vegetation in another area. As noted previously, research on the effects of offsetting demonstrates this is not the case. A limit on land clearance is therefore required. It is this limit that would increase prices for offsets, providing the correct market incentive structure for private land-clearance decisions, and ensure that the offset price reflects the net marginal cost or damage of land clearance.

If the offset market was limited to true like for like offsetting, there would be a natural limit on the total available offsets. The area of each vegetation type available for offsetting would be limited so securing offsets for a heavily cleared vegetation type would require payment of a premium. The premium would reflect the scarcity of that vegetation type. This scarcity in turn represents the marginal damage of land clearance which theoretically increases as land is cleared. However, the proposed reforms discard a true like for like approach, allow for significant variations or use of biodiversity conservation actions, permit payment of expected management costs and opportunity costs into the Biodiversity Conservation Fund in lieu of offsets, and contemplate allowing offsets to be further offset in future. Again, this means that

¹² Gibbons, P. and Eyre, T. (2015) *Review of “Proposed approach to scoring gain in biodiversity values at an offset site”* November 2015

there is essentially no limit on land clearance and the proposed reforms cannot create scarcity. As a result the price will not reflect the net marginal damages of land clearance. These concerns were shared by the independent review of the BAM undertaken in October 2015 which stated:¹³

“(w)e believe that the offset rules may allow too much substitution between biodiversity values and will undermine the price signal that offsets seeks to identify for biodiversity that cannot be easily offset.”

To correct this problem, in addition to implementing the recommendations on the BAM discussed above, two adjustments to the offsets payments calculator are needed. First, it is unacceptable to base the price on past individual or group trade models until the offsets market has been operating effectively and robustly for a number of years. The offset market has not operated in this way to date. The market has not had the required number of sellers or buyers for any group of offsets and thus the price of any trade does not reflect the marginal benefits and costs of land clearance. Hundreds of trades for any class of biodiversity offsets would be needed to ensure that the price reflects the marginal social benefit of the last trade. The proposed cut off of 5 trades for ecosystems and 1 trade for species is not acceptable. This means that in the short-term the offset calculator must focus on the costs model.

The second adjustment is to add a premium that reflects the net marginal damage caused by land clearance. This premium would reflect the premium the Biodiversity Conservation Trust will have to pay to find offsets. It is likely that the Trust will need to invest significant amounts of time to identify and develop credits that are already scarce. To secure these offsets will require a higher price which theoretically reflects the higher marginal damages from that class of cleared vegetation. This premium is over and above the risk loading which merely reflects administrative costs of finding offsets.

If the offset payment calculator is used, the prices generated by the offset payment calculator must reflect the true marginal damages caused by land clearing. Otherwise the financial incentive to avoid clearing of high conservation value land will not exist.

¹³ Gibbons, P. and Eyre, T. (2015) *Draft Independent review of the Biodiversity Assessment Method: A consultancy for the Office of Environment and Heritage for the NSW Government* October 2015.

Part 3: Native Vegetation Regulatory Map and Map Method Statement

The accuracy of the native vegetation regulatory map (**Map**) will be critical to the success or failure of the proposed regime. It is extremely concerning that the Map is not currently available (either as a draft or final product). This means it is not possible for the public to meaningfully comment on the outcomes of the mapping process. Without the ability to do meaningful independent ground-truthing, it is impossible to know the likely accuracy of the Map.

It is likely that the mapping process will be highly contested by landholders in some areas, as noted and discussed further in our submission on the Local Land Services Amendment Bill.

Approach to mapping

EDO NSW fundamentally disagrees with the approach that has been taken to develop the Map. In our submission, an appropriate basis for mapping would be to identify those areas that had been legally cleared in 1990 as Category 1 (blue) and then only map other areas as Category 1 where it can be shown that clearing has subsequently been conducted legally either under the Native Vegetation Act or through a development approval.

In contrast, the current Map Method Statement effectively authorises any illegal clearing conducted since 1990 that has not be the subject of prosecution. Section 7.2 Category 1 (exempt or blue land) layers includes "Land the Chief Executive of OEHL reasonably believes... was lawfully cleared of native vegetation between 1 January 1990 and the commencement of Part 5A of the LLS Act." Section 7.5.1 Lawful clearing prior to commencement of Part 5A of the LLS Act states "Clearing that has taken place prior to the commencement of Part 5A of the LLS Act and at or after 1 January 1990 (as determined by the Chief Executive of OEHL in accordance with best available data) will be considered to be lawful for the purposes of the map, unless the clearing has been the subject of compliance actions" and provides a list of relevant compliance actions. Consequently, it would appear that any land cleared illegally for which a compliance action was not undertaken will be classed as Category 1 land. This is an inappropriate basis to use for the new vegetation management framework.

EDO NSW does not support the use of the proposed Native Vegetation Regulatory Map as it has currently been prepared. Significant improvements are required, as detailed below.

Excluded land

We strongly believe that the Map should be expanded to include an additional protected and sensitive areas category (Category 4), or at a minimum the current excluded land category should be expanded to cover existing protected areas (Category 3).

A new Category 4 would include as a minimum:

- Land subject to an in-perpetuity private land conservation agreement (including Conservation Agreements, biobanking agreements, Nature Conservation Trust agreements and Property Vegetation Plans) or obligation (i.e. those properties that have been identified as offsets in planning approvals but not yet converted to formal agreements); and
- Land that is subject to a conservation measure that was the basis for other land being biodiversity certified; and

- Land to which State Environmental Planning Policy No 26—Littoral Rainforest applies; and
- Land to which State Environmental Planning Policy No 14—Coastal Wetlands applies; and
- Land identified as core koala habitat in a plan of management made under State Environmental Planning Policy No 44—Koala Habitat Protection; and
- A declared Ramsar wetland and Nationally Important Wetlands as listed in the Directory of Important Wetlands; and
- Land that has been mapped as containing critically endangered animals, plants or ecological communities and/or is listed under the EPBC Act; and
- Land that has been mapped as containing mangroves or coastal saltmarshes; and
- Travelling Stock Routes that have been identified as containing areas of high environmental value; and
- Land that is or was subject to remedial action to restore or protect the biodiversity values of the land under the Native Vegetation Act 2003.

These areas would be excluded from Code based clearing and subject to additional assessment conditions.

In relation to the currently proposed Excluded Land (other exclusions), it should be made clear that land reserved under the *National Parks and Wildlife Act 1974* or acquired by the Minister for the Environment under Part 11 of that Act includes nature reserves and indigenous protected areas. It is unclear why the zoning for national park reserves is not included in the list of excluded zones. Further clarification is also required on what would constitute “land dedicated or reserved for a similar public purpose under the *Crown Lands Act 1989*”, for example will State Parks be included. It is also important to note that a number of areas of Crown Land, such as Travelling Stock Routes, may not have been reserved for a public purpose related to environmental protection, but they strongly perform that function today. As noted above, these areas should also be included in Excluded Land.

In this context, we note that appropriate protection of critically endangered animals, plants or ecological communities is wholly dependent adequate mapping (i.e. areas that have not been mapped are not automatically regulated). Agricultural land, which in this framework is likely to be classified as Category 1 or low value grassland, provides habitat for a number of threatened grassland-dependent fauna species, which are only likely to be detected by relevant experts and can be difficult to detect. The effectiveness of the Map therefore requires comprehensive, ecologically defensible mapping which has not been completed to date. This undermines the ability for the Map to function as an appropriate regulatory tool. The use of annual reviews and discretionary reviews available to the Chief Executive of OEH will be vital to ensure adequate protection for threatened species when new information becomes available.

Regulated land (Category 2)

Category 2 (yellow) land should focus on capturing landscapes and vegetation types that require strong regulation. In addition to the layers currently proposed for Category 2, this should include:

- All threatened species and ecological communities not captured by the proposed Category 4 above (it is extremely concerning that the current Category 2 land only refers to critically endangered animals, plants or ecological communities); and
- Over-cleared vegetation types – those vegetation types >70% cleared from their pre-European extent; and
- Vegetation in over-cleared landscapes – those landscapes that are >70% cleared; and

- Old growth forest and rainforest; and
- Intermittently Closed and Open Lakes and Lagoons (ICOLLs); and
- A 50m buffer zone around all SEPP Coastal Wetlands; and
- All riparian zones (not limited to named streams) with an appropriate buffer zone; and
- Sites of geological significance including karst landscapes.

Previously cleared land (Category 1)

Proposed Category 1 (blue) includes areas containing low conservation value grasslands. No definition of low conservation value grasslands is provided and it is unclear how the mapping process will accurately distinguish between high and low conservation value grasslands. Further, land that has been biodiversity certified has been included in Category 1 with no requirement for the offset for that land to be verified. Biodiversity certified land should only be included where the offset area has been protected in perpetuity.

Mapping method

The mapping method is described in considerable detail, including how the results were validated. However, the method (including the validation) does not appear to have been the subject of a public peer review process or published in a scientific journal. This failure to have the method published is extremely concerning, given that it will form the basis for all native vegetation regulatory management in NSW. In addition, the method seems similar to that used for the strongly criticised Greater Hunter Native Vegetation Mapping (i.e. the delineation of woody/non—woody types by remotely sensed data pattern analysis). A review of that method (Hunter, 2016¹⁴) found it to have an accuracy of less than 30%. While it is expected that this method has improved on previous performance, even before peer review, this method has been found to have an accuracy as low as 61% for heathlands.¹⁵ We submit that the proposed Native Vegetation Regulatory Map should not be used for regulatory purposes without further independent validation.

EDO NSW further notes the statement that “(t)he method statement does not assess the type, condition or environmental value of vegetation, which remains the subject of site-based assessment”, and, “(t)he process is designed to capture detectable, significant changes in the extent or type of vegetation across the landscape, indicating that there has been, or is ongoing, agricultural use of the land, accurate to a sub-paddock scale”. Further, the Map Method Statement notes that 2ha is the minimum mapping unit for ALUM classification units. There is no information about how high conservation value grasslands will be defined or identified. In combination, this creates significant risk for the appropriate management of native vegetation. Manual checking and on ground verification are likely to be needed for native grassland, paddock trees, wetlands, small areas of vegetation, and areas with regular inundation. The ability to map paddock trees and small clumps of vegetation will particularly important to understand the effect of the proposed Codes.

Section 4.4.1 of the Map Method Statement notes that patterns or evidence of agricultural production in ADS and SPOT5 imagery includes the use of uniform planting patterns associated with horticulture (tree crops) and plantation forestry. It is important to note that a large number of Landcare projects using mechanical tree planting are likely to look similar to

¹⁴ Hunter, J.T. (2016). Validation of the Greater Hunter Native Vegetation Mapping as it pertains to the Upper Hunter region of New South Wales. *Ecological Management & Restoration*, 17: 40–46.

¹⁵ Map Method Statement Appendices, Appendix 5A: Creating and validating the 2011 woody extent map, Table 1. SPOT woody vegetation extent accuracy statistics using visually interpreted point data as reference, grouped by region and vegetation formation Statistics are given for the extent maps before manual edits (woody probability with threshold) and after manual edits (edited woody extent). (TPR=woody true positive rate; FPR=woody false positive rate).

this pattern. Further clarification should be provided on how the mapping provides distinction between agricultural activities and Landcare style activities.

We note that one of the map layers relied on is cadastral data. Section 8.5 refers to “responding to cadastral misalignment”, but does not detail how the mapping will respond to other database errors. The heavy reliance on imagery, not on the historical documents of land ownership, creates potential problems for the accuracy of the map. This problem is exacerbated by the precedence of categorisation (section 8.4 of the Map Method Statement) whereby areas mapped as Category 1 in the land use mapping will modify the boundary of the excluded areas in the final map. EDO NSW submits that areas mapped as excluded areas should be retained as excluded land unless ground truthing demonstrates that the area has been inappropriate mapped.

Annual Review and Updates

EDO NSW is also concerned about the process for annual reviews and updates. Section 9.3 states that key components of the update include validating the legality of any clearing in line with Chapter 7 of the Map Method Statement. This approach includes further reliance on an inappropriate method of assuming clearing has been conducted legally without any independent verification. Changes to the map from Category 2 to Category 1 should only occur where a landholder can demonstrate the clearing has been done legally. Where this cannot be demonstrated, the annual review should trigger mandatory compliance and enforcement activity in response to the legal breach.

Links to other mapping processes

Finally, it is unclear how the mapping will link with other mapping processes such as regional planning processes that identify areas of high biological diversity and mapping of sensitive coastal zones under the forthcoming Coastal SEPP.

Part 4: Accreditation

EDO NSW has long argued the need for an appropriate ecological consultant accreditation system.¹⁶ While the existing BioBanking model may form an appropriate basis for such a scheme, further refinement, particularly in the area of assessment and review is necessary. Appropriate implementation of the BAM will require skills in botany, ecology and mapping and any accreditation scheme must ensure that each BAM assessment is completed by an individual or individuals with the appropriate range of skills. Despite the importance of the ecological consultant in ensuring environmental outcomes, there is no obvious role for OEHS in assessing the effective implementation of the BAM apart from data collection via BDARs.

We recommend that further targeted consultation occur with bodies such as ECA and EIANZ to determine the integrity, transparency and accountability requirements for the necessary scheme.

EDO NSW has also previously submitted that in order to increase objectivity, independent assessors should be allocated by OEHS from a pool of accredited assessors to work on proposed projects.

¹⁶ Most recently this was discussed in our *Submission on A New Planning System for New South Wales – White Paper* June 2013 available at: http://www.edonsw.org.au/new_edo_nsw_white_paper_submission_final.

Part 5: Monitoring, Evaluation and the need for Regional Environmental Accounts

In the areas of monitoring, evaluation and reporting, we strongly support the Panel's recommendations to:

- better harness data collection efforts, promote open government and establish a whole of government biodiversity portal (recommendation 30)
- develop and implement a robust whole of government monitoring and evaluation framework (recommendation 36) and
- mandate a statutory review of the legislation against its objects every five years (recommendation 37).

However, neither recommendations 30 or 36 are given practical effect in the draft Bills. Nor is the goal to 'improve and share knowledge' of biodiversity and 'ecosystem services' (BC Bill 1.3(c)). The term 'ecosystem services' is not used or defined anywhere beyond the BC Bill objects clause, and it is not used at all in the LLS Bill.

The two other goals of the NSW Government's draft biodiversity and land-clearing reforms are to conserve biodiversity and to 'facilitate ecologically sustainable development' (**ESD**). 'Facilitate' is a departure from the current Planning Act (to "encourage" ESD). Nevertheless, ESD requires *the effective integration of social, environmental, social and economic factors in decision-making*. It also calls for maintaining or enhancing the environment for future generations.

It is impossible to integrate environmental factors in NSW decision-making – or know if we are maintaining NSW environmental values – without (1) clear environmental goals, (2) consistent targets, and (3) good data to guide natural resource management (**NRM**). The draft Bills miss an opportunity to address all three of these gaps.

The Review Panel's issues paper and final report highlighted the under-investment in environmental data in NSW. The Panel called for an extensive environmental monitoring and reporting framework to establish the trends and condition in biodiversity values (recommendations 30 and 36). Such 'environmental accounts' are an essential tool for conserving biodiversity at a bioregional and state scale – whether by a regional 'no net loss or better' test or otherwise.

NSW cannot improve its record on biodiversity loss unless and until our laws set clearer goals and targets, with comprehensive data and monitoring requirements. According to the Premier in the 2015 State Plan, "what gets measured, gets managed".¹⁷ It is not beyond governments to set environmental goals and targets if they want to achieve them.

The reforms need to set high-level biodiversity conservation and natural resource management goals, more specific targets, and establish a set of state and regional environmental accounts – to make the environment visible in decision-making.

High-level goals

An excellent example of clear environmental goals and accountability in law is the *Environment (Wales) Act 2015*. This wide-ranging act puts ESD at the heart of Welsh decision-making. It includes long-term aims on environmental protection and climate change. Instead of giving Welsh Ministers wide discretion to apply the law as happens in NSW, it

¹⁷ The Hon Mike Baird, Foreword, *NSW Making it happen – State Priorities* (2015).

requires Ministers to act in ways that achieve the law's aims. This includes duties to protect Welsh ecosystems from degradation, and to identify species and areas vital to Welsh people's lives and livelihoods.

Biodiversity Conservation and NRM targets and resources

To make high-level goals work, they must be supported by specific environmental targets. In 2007 the NSW Natural Resources Commission set clear and useful state-wide targets for 2010-2015. They aimed to improve native vegetation health, river and wetland health, biodiversity of fauna, soil health and more.

In the past 5 years, these targets have been quietly abandoned. Their progress has not been reported on since 2010, and it is unclear what - if anything - has replaced them. Without clear goals and targets for the state, it is harder for regional and local planning bodies to establish and pursue complementary programs. It's also harder to know if laws and policies are working, and what needs to change.

Regionally, many former Catchment Management Authorities (**CMAs**) had well-considered targets that drew on the state-wide goals noted above. The merger of CMAs into LLSs in 2014 has presented new challenges for institutional adjustment and NRM, including a raft of new strategic plans to come. This challenge is only likely to increase, with the Government's new proposal that LLSs take over greater responsibility for land clearing and biodiversity assessments under the LLS Act (despite the Review Panel proposal that clearing which changed land-use should be dealt with via the Planning Act). To perform any of these roles effectively, LLS and partner agencies need the systems, skills and resourcing to collect and analyse environmental data to make good decisions that work to achieve agreed goals and environmental targets.

Better data, ecosystem services, and a state-wide stocktake

Reliable data on environmental assets and their condition is a vital input into biodiversity conservation, NRM and strategic land-use planning. This is because environmental assessments and impact evaluation are a key part of the NSW planning system. Decision-makers need information to be as complete and accurate as possible.

Governments and the private sector are starting to recognise the importance of data on regarding 'ecosystem services'. The Ontario Biodiversity Council puts it like this:

Biodiversity is the foundation upon which humans derive benefits called ecosystem services. For example, natural systems such as wetlands, free-flowing rivers, forests and grasslands provide services such as water purification, storm and flood protection, air pollution mitigation and recreational opportunities that benefit human well-being...

Estimating the value of ecosystem services can reveal social costs or benefits that otherwise would remain hidden. Once identified and understood, these values can be considered and accounted for in the policy and decision-making process.¹⁸

In the UK, USA, Canada and elsewhere, agencies are integrating ecosystem services into strategic planning, assessment and land management programs:

- In 2013 the UK Government issued guidance for policy and decision makers on using

¹⁸ See <http://sobr.ca/report/>, Indicators report – State of Biodiversity 2015 (p 138).

an 'ecosystems approach' and valuing ecosystem services.¹⁹

- The *Environment (Wales) Act 2015* calls for identifying keystone species and areas.
- In 2015 the USA President issued a directive to all federal agencies to develop ecosystem services frameworks in forward planning.²⁰
- The Ontario Biodiversity Council has set goals and targets to implement ecosystem services approaches by 2020.²¹

Similarly the NSW Government should invest in data-gathering systems on ecosystem services, functions, values and trends. This could include a state-wide 'ecosystems assessment' as the UK did in 2009-11, with a 2014 follow-on.²²

While the three-yearly *State of the Environment (SOE)* report gives a high-level 'snapshot' of NSW, it doesn't focus on ecosystem services, and isn't designed for region-by-region biodiversity conservation, NRM or land-use planning. SOE reporting itself struggles with the limited data available across its wide remit. For example, the 2012 section on Biodiversity largely relied on the evidence from the 2009 report. Even the 2015 report said it couldn't evaluate general fauna and flora trends beyond 2009 data, except for threatened species (and data on those is still patchy). Finally, there is no requirement for Government to integrate SOE findings in law and policy-making. Biodiversity laws need to connect the dots, requiring better data *and* integrated decision-making.

Environmental accounts

To ensure regional planning processes and decisions are informed and evidence-based, we also recommend the NSW Government takes the lead on establishing a system of state and regional *environmental accounts* to monitor condition and trends.

Beyond supporting the tools proposed in these reforms, benefits of establishing regional environmental accounts in biodiversity law would include:

- equipping local communities and regional bodies with the data they need to make responsible decisions on biodiversity, productive and sustainable livelihoods and catchment management;
- establishing trends about land uses, ecosystems and key regional threats to biodiversity and productive agriculture;
- painting a comprehensive picture of Mitchell landscapes in an LLS region and plant community types in IBRA-subregions;
- identifying severely over-cleared landscapes (very low percentage in good condition);
- helping to prioritise government funding and to landholders management grants in exchange for limiting or preventing further clearing of over-cleared landscapes; and,
- providing assurance to government that funding is addressing the right problems, and encouraging increased funding in turn.

Environmental accounting does not mean simplifying everything to a simple 'dollar value'. That is neither practical nor appropriate. Nevertheless, various expert reviews have recommended establishing a set of National Environmental Accounts that track the extent,

¹⁹ See: <https://www.gov.uk/guidance/ecosystems-services>.

²⁰ See: <https://www.whitehouse.gov/blog/2015/10/07/incorporating-natural-infrastructure-and-ecosystem-services-federal-decision-making>.

²¹ See <http://sobr.ca/report/>, Summary report – State of Biodiversity 2015 (Target 14).

²² See: <http://uknea.unep-wcmc.org/>.

quality and trend of natural resources such as native vegetation, water, soil and biodiversity.²³

Diverse Australian experts including the Wentworth Group of Concerned Scientists, the Australian Chapter of the IUCN, Australian Bureau of Statistics and Bureau of Meteorology have all recently developed tools and guidance to put natural assets on the balance sheet.²⁴ In the planning system, bodies like the Australian Institute of Landscape Architects have also called for recognising the benefits of 'green infrastructure' to urban living.

Most relevantly, the Wentworth Group's *Accounting for Nature* model uses a scoring system called 'Econds' to measure change in extent and condition of native vegetation, helping to track loss and gain at a regional landscape scale.²⁵

The biodiversity review panel is only the latest to highlight the under-investment in environmental data in NSW, and to call for an extensive environmental monitoring and reporting framework. We find similar calls in the Chief Scientist's review of NSW coal seam gas laws and successive state and federal SOE Reports. We strongly recommend that the NSW Government establish a system of environmental accounts prior to the commencement of any new laws.

²³ See Wentworth Group of Concerned Scientists, *Accounting for Nature* (2008); and *Accounting for Nature – Quick Guide: Guidelines for Constructing Regional Scale Environmental Asset Condition Accounts* (2013) at www.wentworthgroup.org. See also Dr. A. Hawke, *Report of the Independent Review of the EPBC Act 1999* (2009), Chapter 19 and recommendation 67. See further National Sustainability Council, *Sustainable Australia Report 2013*, 'Sustainability Indicators for Australia'.

²⁴ See for example: The Wentworth Group, <http://wentworthgroup.org/2015/06/blueprint-paper-1-using-markets-to-serve-natural-capital/2015/>; AC-IUCN, <http://aciucn.org.au/index.php/publications/2015-valuing-nature/>; Bureau of Meteorology, *Guide to Environmental Accounting in Australia*, at <http://www.bom.gov.au/environment/activities/accounts.shtml>; and Australian Bureau of Statistics, *4655.0 - Australian Environmental-Economic Accounts, 2015*, at www.abs.gov.au.

²⁵ See Wentworth Group of Concerned Scientists, *Accounting for Nature* (2012); and *Accounting for Nature - Quick Guide: Guidelines for Constructing Regional Scale Environmental Asset Condition Accounts* (2013) (in association with NRM Regions Australia) at www.wentworthgroup.org/.