Submission No 58

INQUIRY INTO INTEGRITY OF THE NSW BIODIVERSITY OFFSETS SCHEME

Name: Mr Alexander Cox

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Ms Cate Faehrmann MLC
Chair, Inquiry into the Integrity of the NSW Biodiversity Offset Scheme
Parliamentary Committee No.7 Planning and Environment
NSW Legislative Council

31st August 2021

Dear Ms Faehrmann,

RE: Submission to the Inquiry into the Integrity of the NSW Biodiversity Offset Scheme

I would like to thank you for the opportunity to contribute to the NSW Legislative Council's Inquiry into the Integrity of the NSW Biodiversity Offset Scheme ('the Inquiry').

I am a PhD candidate at the Australian National University's Crawford School of Public Policy. My research is currently centred around the use of market based policies in environmental management and biodiversity conservation in Australia.

In my submission, I draw principally on the original research I conducted in 2020 for my Master's thesis, also as a student at the Crawford School. In this research, I studied the use of the Biodiversity Assessment Method in impact assessment, to examine how biodiversity offsetting is occurring 'in practice' under the Biodiversity Offset Scheme ('BOS'). My research involved examining biodiversity impact assessments, drawn principally from the mining industry, and interviewing both assessors accredited within the BOS and staff at the Biodiversity Conservation Trust.

In my submission I provide a brief response to each of the four articles of concern to the Inquiry. I additionally offer a number of recommendations which I believe will improve the integrity of the scheme.

I would like to commend you and your colleagues for organising this urgently needed review of biodiversity offsetting within NSW. I would welcome any further opportunity to discuss my submission in greater detail should it be of any additional benefit to the Inquiry.

Yours sincerely,

Alexander Cox

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Responses

1. The effectiveness of the scheme to halt or reverse the loss of biodiversity values, including threatened species and threatened habitat in NSW, the role of the Biodiversity Conservation Trust in administering the scheme and whether the Trust is subject to adequate transparency and oversight

The NSW Biodiversity Offset Scheme ('the scheme') is unlikely to reverse existing declines in biodiversity. This is because the scheme does not adequately protect areas of existing habitat for threatened species from further land clearing and does not provide a mechanism to secure biodiversity offsets which are equivalent or additional to habitat cleared for development.

Three features of the scheme stand out as weaknesses, namely:

1. That the value of biodiversity offsets (referred to as 'Biodiversity Stewardship Sites') are calculated on the basis of 'averted loss'.
2. The inappropriate application of the mitigation hierarchy when determining whether projects should be approved.
3. That in practice, the scheme is permitting land clearing in the absence of establishing appropriate offsets.

<u>Use of 'Averted Loss'</u>

Biodiversity offsets in theory provide compensatory habitat to land which is lost through clearing required for development. In order to effectively remedy biodiversity impacts, the biodiversity 'value' provided by offset sites must be equivalent to (or ideally exceed) the value of habitat lost. This requires a means of calculating the biodiversity value of a biodiversity offset relative to the value of the habitat which is cleared.

In the BOS the biodiversity value of native habitat is determined through a standardised assessment method, the Biodiversity Assessment Method ('BAM'). The BAM allows accredited ecologists (referred to as 'assessors') to measure the biodiversity value of native vegetation communities as well as the habitat of threatened species in terms of credits. Credits can denote either specific vegetation communities (ecosystem credits) or habitat for individual endangered species (species credits). The allocation of credits is determined through in-field surveys, habitat mapping and the use of an online calculator tool, the Biodiversity Assessment Method Calculator ('BAM-C').

In order to calculate the biodiversity gain provided by an offset site, biodiversity offset schemes require a counterfactual scenario, namely what biodiversity values could be

expected in the future in the absence of the conservation interventions at a given offset. The BOS offers a 'business as usual' scenario as a standard counterfactual, which is defined as 'the difference in current vegetation and habitat condition of the land compared with the probable future vegetation condition if the land was unmanaged over 20 years'.[1]

Importantly this counterfactual assumes ongoing declines in vegetation and habitat quality in the absence of management interventions. Hence, much of the calculated biodiversity 'gain' of managed offset sites is derived by 'averting loss' and is based on the assumption that in the absence of a Biodiversity Stewardship Agreement ('BSA'), that biodiversity values would continuously decline in the future. While Stewardship Sites establish legal covenants to protect land from future development, under the current model, they provide no genuinely additional habitat to compensate for the land clearing which they purportedly offset. Given the heavy reliance on averted loss to calculate biodiversity 'gains' in the BOS, biodiversity offsetting under the current policy will only be able to maintain biodiversity values against a declining baseline, in effect 'locking in loss'.[2] The use of averted loss to calculate the biodiversity 'gain' at stewardship sites is particularly egregious when considering the assumed rates of background loss in the current counterfactual scenario may actually exceed current rates of vegetation clearing.[3]

Recommendation 1: The calculation of biodiversity gains at offset sites should not rely on the principal of averted loss, but should instead require genuinely additive habitat to compensate for land clearing.

Use of the Mitigation Hierarchy

The mitigation hierarchy is a conceptual model which describes the relationship between impact avoidance and impact mitigation in development planning. The mitigation hierarchy aims to minimise the environmental impacts of development, principally by avoiding impacts to biodiversity values through project design. Under the hierarchy, avoiding impacts is preferred to reducing impacts through design which is in turn preferred over undertaking development with biodiversity impacts. Unavoidable impacts to biodiversity

[1] DPIE 2020, Biodiversity Assessment Method Stage 3 Manual, p10, https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-operational-manual-stage-3

[2] Maron, M, Bull, JW, Evans, MC & Gordon, A 2015, 'Locking in loss: Baselines of decline in Australian biodiversity offset policies', *Biological Conservation*, vol. 192, pp. 504-512

[3] Maron, M, Bull, JW, Evans, MC & Gordon, A 2015, 'Locking in loss: Baselines of decline in Australian biodiversity offset policies', *Biological Conservation*, vol. 192, pp. 504-512

values in theory are to be compensated through equivalent biodiversity benefits elsewhere, theoretically permitting development to occur while maintaining a standard of 'no net loss'.[4]

Accredited assessors are required to outline the avoidance and mitigation measures which have been adopted by a proposed development when preparing a Biodiversity Development Assessment Report ('BDAR'). My research found that the cost of compensating for biodiversity impacts are sufficient to incentivise some developers to minimise the amount of land clearing they undertake.

Assessors I interviewed reported that their clients were generally able and willing to reduce impacts to biodiversity where possible through project design. In smaller developments such as subdivisions and building projects, assessors claimed that clients successfully reduced impacts by strategically placing features, such as roads, fences and buildings away from areas of high biodiversity value, thereby reducing the 'footprint' of their projects. Under the rules of the BOS, insufficient mitigation steps on the part of developers with regards to Serious and Irreversible Impacts ('SAII') result in compulsory rejection of development applications.

Unlike under the previous BioBanking Scheme, the thresholds requiring offsetting are triggered even by small developments in the BOS. This means that a broader range of developers are now required to assess and reduce their biodiversity impacts. The cost to developers of securing offsets either through establishing Biodiversity Stewardship Sites, via the credit market or by paying into the Biodiversity Conservation Fund ('BCF') can be significant. Assessors I interviewed during my research indicated that the cost of even minor biodiversity impacts could add tens or hundreds of thousands of dollars to the cost of a project. The financial incentives created by the BOS have provided ecologists with some leverage in project planning, 'the system is the system so you can't really argue ... and there's nothing like saying to them [clients] that's going to cost you seventy-thousand'.[5] Most of the assessors I spoke to reported playing an active role in iterative project planning and design, particularly since the complexity of the BAM and the assessment process means that developers depend on advice navigating the requirements of the BOS and minimising the biodiversity impacts of their projects.

While this a commendable outcome, in practice, the clearing of threatened species habitat continues and according to the 2020 Biodiversity Outlook Report, remains a key driver of

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[4] Bull, JW, Suttle, KB, Gordon, A, Singh, NJ, & Milner-Gulland, EJ 2013, 'Review of Biodiversity offsets in theory and practice', *Fauna and Flora International*, vol. 47, no. 3, pp. 369-380

[5] Interviewee 4, accredited assessor

current declines in biodiversity within NSW.[6] While biodiversity offsets are intended for use as a 'last resort' measure, to compensate for unavoidable land clearing, under the current model, they continue to be used to facilitate development. This is particularly the case with large projects that require extensive clearing, including state infrastructure and mining projects. With such projects, egregious impacts to local biodiversity continue to be justified by the purported economic value of these projects to the wider community. Greater protection of remaining native vegetation and threatened species habitat in NSW will only be achieved by minimising the use of biodiversity offsetting, and reforming the planning process in ways which further reduce the underlying rate of vegetation clearing.

Recommendation 2: Developers should be further encouraged to avoid and minimise land clearing in accordance with the mitigation hierarchy. Development applications which contemplate significant clearing of threatened species habitat should be not be permitted in the absence of truly compelling justification.

Challenges in Securing Offsets

Developments which are approved by consent authorities (state or local government) are required to offset the biodiversity impacts of any land clearing by securing equivalent biodiversity credits to those calculated as the impacts of a project. The BOS allows developers to do this in three ways:

1. Purchase credits from a vendor on the open market.
2. Secure and register their own Biodiversity Stewardship Sites which yield equivalent credits.
3. Pay a sum of money to the Biodiversity Conservation Trust ('BCT'), which then accepts the responsibility of securing an equivalent offset. Typically the BCT secures offsets through a reverse tender process and assists conservation-minded landowners in establishing BSAs for particular credit types.

My research found that most developers opt to pay into the Biodiversity Conservation Fund ('BCF') managed by the BCT to resolve their offset obligations. Centralising offsetting within the BCT offers multiple advantages, in particular noting that the BCT has a greater conservation expertise relative to most developers.

Importantly, in principal, the BCT is able to acquire and manage a long term, strategic portfolio of BSAs. Currently, the market in biodiversity credits is highly illiquid, which limits

[6] DPIE 2020b Biodiversity Outlook Report, https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-outlook-report

the ability of developers to purchase credits from private landowners who have established BSAs on their land. The status of the market is such that the BCT plays an essential role in mediating between developers seeking to discharge their offset obligations and landowners seeking to derive income from conservation activities on private land.

Unfortunately the BCT has not yet demonstrated an ability to secure offset sites at the rate at which developers continue to clear land. In the three years since the Biodiversity Offset Program ('BOP') commenced, payments by developers to the fund managed BCT have exceeded the expenditure of the BCT in acquiring offsets. The risk is that a growing 'offset gap' is occurring, where development-related land clearing continues, but the securing of sufficient offsets lags, and it is unclear that in every case, sufficient offsets may be secured at all.

Some of the interviewees I consulted during my research suggested that the amount of money paid by developers into the BCF is currently insufficient for the BCT to incentivise prospective landowners to establish BSAs. This should be of significant concern as it implies that the BCT will struggle to satisfy all of the biodiversity offset obligations currently 'on the books'. The BCT is currently not able to set the price at which developers transfer their offset obligations to fund. This is because the prices of credits transferred to the BCF are set by a calculator, the Biodiversity Offsets Payment Calculator ('BOPC'), currently maintained by the Department of Planning, Industry and Environment ('DPIE').

The BOPC calculates the price at which credits may be transferred to the BCT. It is based on an estimated market price of each credit type, in addition to a risk premium and the projected administrative costs that the BCT will incur to meet a developer's offset obligations. Given the very limited amount of trading which has occurred on the open market, there is a risk that the credit price predicted by the BOPC underestimates the price that the BCT will actually have to pay landowners to establish BSAs and thus stimulate credit supply.

Recommendation 3: The BCT should be empowered to set the price of biodiversity credits that developers pay should they elect to pay into the BCF. This would provide confidence that the funds provided to the BCT by developers are sufficient to fully satisfy their offset obligations.

The inquiry should note this is a key recommendation of the DPIEs proposed reforms to the biodiversity credit market, prepared in March 2021.

Transparency of the BCT

Public reporting of the activities of the BCT could be improved. Currently, the BCT maintains an online, searchable register of BSAs (in addition to other private Conservation Agreements and Wildlife Refuges) and produces an Annual Report as required by Part 10.12 of the *Biodiversity Conservation Act 2016* (NSW).

Greater transparency to the operations of the BCT and the operation of the biodiversity credit market could be achieved by:

- Expanding the existing public register to show all of the offset obligations transferred to the BCT, including publishing the details of individual projects and developers who have paid into the BCF. This register should show the status of each of these transferred credit obligations, to provide the public confidence that offset obligations which have been offloaded by private developers to the public are being adequately satisfied.
- Providing additional information on the public register of BSAs, currently listed on the BCT's website.[7] This register should additionally describe the type and quantity of ecosystem and species credits associated with each registered BSA. Ideally this register should also provide information on the ongoing conservation management actions required of the landowner, and their compliance status as assessed by the BCT over time. This would improve public confidence in private conservation and introduce some accountability for participants in the BOS.
- Providing additional detail in each annual report prepared by the BCT, in particular with respect to the BOP. In both the 2019 and 2020 annual reports, reporting on the activities of the BOP did not exceed a single page. The BCT should report, in a clear and transparent manner, the number and type of credits transferred to the BCT from developers each year and the number and type of outstanding credit obligations held by the BCT. The BCT should additionally be forthright in reporting the challenges it anticipates with securing offsets for specific credit types (as appropriate).
- DPIE should produce an annual 'state of the market report' as described in the recently proposed changes to strengthen the BOS.[8] Such a report should discuss trends in market activity and provide some explanation of price changes to individual biodiversity credit types.

[7] The public register is available at https://www.bct.nsw.gov.au/agreements-search-page

[8] DPIE 2021, Strengthening the Biodiversity Offset Scheme, https://www.environment.nsw.gov.au/research-and-publications/publications-search/strengthening-the-biodiversity-offsets-scheme-a-new-approach-to-developer-charges

Recommendation 4: The BCT should list additional information on its public register to show both the compliance status of active BSAs and to show the number and type of outstanding credit obligations within the BOP.

2. The adequacy of the use of offsets by the NSW Government for major projects and strategic approvals

Biodiversity offsetting has been the subject of significant academic interest within Australia. The Inquiry should note that current academic research has generally expressed skepticism towards the adequacy of biodiversity offsets as a policy instrument for reversing declines in biodiversity. Biodiversity offsetting policies have been developed by most Australian states and at the Commonwealth level but there is little evidence at this time to suggest that they have been associated with improved conservation outcomes.

Prominent lines of critique in the Australian context include:

- Biodiversity offsets based on the principal of averted loss have little capacity to improve biodiversity values except against an ongoing rate of decline.[9]
- Areas of habitat preserved within biodiversity offsets have repeatedly been found to be of diminished quality for endangered species compared to habitat lost to development. Of particular concern in Australia is the presence of ecosystem features such as tree hollows, which provide important habitat for a range of endangered birds and mammal species such as the Swift parrot (*Lathamus discolor*). Habitat features such as hollows can take decades to form naturally within a landscape, are often only found in 'mature' ecosystems and are difficult to replicate.[10] [11]
- Biodiversity offsetting can result in changes to habitat distribution within the landscape and encourage consolidation of the remaining biodiversity values in specific areas. Concentrating biodiversity within narrow corridors can reduce the resilience of some threatened species and also risks reducing public access to natural spaces.[12]
- Regulatory agencies are often under-resourced for the task of assessing development proposals and enforcing a credible compliance regimes. See for example, the recent

[9] Maron, M, Bull, JW, Evans, MC & Gordon, A 2015, 'Locking in loss: Baselines of decline in Australian biodiversity offset policies', *Biological Conservation*, vol. 192, pp. 504-512

[10] Thorn, S, Hobb, RJ, & Valentine, LE 2018, 'Effectiveness of biodiversity offsets: An assessment of a controversial offset in Perth, Western Australia', *Biological Conservation*, vol. 228, pp. 291-300

[11] Gibbons, P & Lindenmayer, DB 2007, 'Offsets for land clearing: no net loss or the tail wagging the dog?' *Ecological Management and Restoration*, vol. 8, no. 1, pp. 26-31

[12] Kalliolevo, H, Gordon, A, Sharma, R, Bull JW & Bekessy, SA, 2021, Biodiversity offsetting can relocate nature away from people: An empirical case study in Western Australia, *Conservation Science and Practice*, pp. 1-13

Independent Review into the *Environmental Protection and Biodiversity Conservation Act 1990* (Cth) chaired by Professor Graeme Samual AC.[13]

An additional, often overlooked, drawback with the use of market-based conservation policies is their potential to create perverse conservation incentives. My research identified three such perverse incentives within the NSW BOS:

- As the cost of credits is determined by market forces, rare credit types which denote particularly endangered species or ecological communities will attract higher prices than ecosystem or species credits which are more frequently traded. Higher credit prices provide greater incentive to both avoid damaging ecosystems in the first instance and in supporting private conservation of those habitat types. This means that the BOS will only create powerful incentives for conservation with respect to ecosystem types which are under sustained development pressure. For highly endangered ecosystem types, the market incentives the BOS provides in favour of conservation perversely assume that continued clearing of these habitat types is ongoing. An example of this can be seen with the high credit prices seen for species and vegetation communities associated with the Cumberland Plain in South West Sydney, many of which are critically endangered.
- Given the cost of having land surveyed by an accredited assessor and established as a BSA, some landowners opt to only partially survey their land for particular species or ecosystem credits, and not the entire set of biodiversity values which may be present. As conservation management obligations are based on the surveyed biodiversity values recognised at a given offset site, this can mean that land protected under BSAs may not be managed optimally to protect all the biodiversity values actually present.
- Receiving financial payments for establishing a BSA and managing private land for its conservation values is the key incentive mechanism through which the BOS encourages landowners to participate in the scheme. However, when landowners establish Biodiversity Stewardship Sites, they do not begin earning a return until their credits are purchased on the market. The price of credits sold by a landowner must exceed a threshold sum termed the 'total fund deposit'. This deposit is held in trust, with annual payments subsequently provided to landowners in perpetuity to compensate them for their conservation work. Should a landowner not be able to sell their credits, or fail to raise sufficient proceeds to reach the total fund deposit, they incur the conservation management obligations associated with their BSA, but remain uncompensated. This can lead to situations in which some landowners are either disincentivised or insufficiently resourced to adequately maintain the biodiversity values of land ostensibly protected under the offset scheme.

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[13] Samuel G, 2020, The Independent Review of the EPBC Act, https://epbcactreview.environment.gov.au/resources/final-report

Recent investigative journalism has additionally highlighted the inadequacy of several large biodiversity offsets associated with large infrastructure projects in Sydney's South-West, including the construction of the Western Sydney International Airport at Badgerys Creek. These examples cast significant doubt on the ability of the BOS, as currently constituted, to deliver meaningful conservation outcomes. Widely publicised examples include:

- The use of Defence Establishment Orchard Hills as a biodiversity offset for the western Sydney airport, despite this land already being legally protected from future development.[14]
- The windfall profits received by some ecological consultants from selling credits to their clients seeking advice on how to satisfy their offsetting obligations under the BOS. In particular, the NSW Government and Roads and Maritime Services, which as part of the offsetting obligations associated with developing growth centres in Western Sydney and the Western Sydney Infrastructure Plan respectively, both sought advice from the prominent environmental consulting firm EcoLogical Australia. It has since emerged that executives of EcoLogical owned land which was sold to the state government, a client of the firm, to satisfy the government's offsetting obligations.[15]

3. The impact of non-additional offsetting practices on biodiversity outcomes, offset prices and the opportunity for private landholders to engage in the scheme

At present, the ability of landowners to participate in the BOS is limited. As private landowners electing to establish BSAs and derive income from conservation management are responsible for the 'supply' side of the credit market, increasing their participation is necessary for a functional market in biodiversity credits to develop. The lack of available credits for purchase on the open market is resulting in the majority of developers electing to meet their offset obligations by paying into the BCF. In effect, due to market illiquidity, the balance of biodiversity offsetting obligations are being transferred to the public.

The lack of a viable credit market has created a circular problem with respect to credit supply. Landowners are disincentivised to register their properties under BSAs, as they have little guarantee that they will be able to sell credits to a developer, the majority of

[14] Cox, L, 2021, Environment officials questioned use of land government already owned as offset for western Sydney airport, *The Guardian*, published 2nd August 2021, https://www.theguardian.com/environment/2021/aug/02/environment-officials-questioned-use-of-heritage-listed-land-as-offset-for-western-sydney-airport

[15] Cox, L, 2021, 'Deeply concerning': government consultant made millions from NSW environmental offsets, *The Guardian*, published 28th April 2021, https://www.theguardian.com/environment/2021/apr/28/deeply-concerning-government-consultant-made-millions-from-nsw-environmental-offsets

whom elect to pay into the fund. Currently, landowners considering establishing a BSA are being advised by assessors and staff at the BCT not to have their land appraised as a Stewardship Site unless they are able to secure a purchaser of their credits in advance.

Conversely, developers opt to pay into the fund as there are typically no credits for sale on the market and establishing their own BSA typically engenders significant project delays as candidate sites must be found, purchased and then appraised by an assessor.

A recent review of the NSW biodiversity credit market by EY Port Jackson Partners noted:

> *The Scheme consists of a high number of distinct credit classes with few and infrequent transactions. There are 359 different OTGs [offset trading groups] for ecosystem credits and 983 different species credits. 88% of ecosystem OTGs and 97% of species credits have never been traded.*[16]

While reducing the number of credit types might seem like an obvious way to increase market liquidity, this would undermine the potential of the scheme to deliver offsets which are suitably 'like for like'.

In a functioning market, the price of credits would be determined by supply and demand forces created between developers seeking to purchase credits (and satisfy their offset obligations) and landowners engaged in private conservation (selling credits). Should the supply of particular types of credits be limited relative to demand, the credit price should rise to such an extent that landowners who have the opportunity to establish an offset site which generates in-demand credit types are sufficiently incentivised to participate in the scheme. The ability of developers to pay into the BCF however means that the price set by the BOPC in effect acts as a *price ceiling* and limits the ability of credit prices to rise beyond what the calculator determines. The BOPC was never intended to operate in this manner. As the pricing algorithm used by the BOPC is largely based on the trading activity of different credit types, the lack of trading has introduced the risk that the BOPC is setting prices at levels which have no relation to the supply or demand for individual credit types.[17]

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[16] EY Port Jackson Partners, quoted in DPIE 2021, p.3, Strengthening the Biodiversity Offset Scheme, p. https://www.environment.nsw.gov.au/research-and-publications/publications-search/strengthening-the-biodiversity-offsets-scheme-a-new-approach-to-developer-charges

[17] DPIE 2021, Strengthening the Biodiversity Offset Scheme, https://www.environment.nsw.gov.au/research-and-publications/publications-search/strengthening-the-biodiversity-offsets-scheme-a-new-approach-to-developer-charges

In its annual report for the 2018 financial year, the BCT reported 73 offset obligations were transferred to the BCT by developers electing to pay into the BCF (with developer payments totalling $9.7m). That year, 6 of these offset obligations[18] were satisfied (i.e. the BCT purchased sufficient, appropriate credits to fully offset 6 developments). Subsequently in 2019, a total of 231 offset obligations were held by the BCT (totalling $20.8m), of which only 18 were fully offset. Notwithstanding the significant logistical challenges posed by the COVID-19 pandemic, it is concerning that in the 2019 financial year, the BCT only appears to have secured 2 additional BSAs, despite receiving approximately $10m in developer contributions and 158 additional offset obligations.[19] As of March 2021, the number of offset obligations held by the BCT has already reached 384, with total developer contributions exceeding $30m.[20] This suggests the existence of a large and growing 'offset gap' as development-related land clearing continues, but the securing of suitable offsets continues to lag.[21]

As per recommendation 3 (p6), the BCT should have the ability to set the price at which developers discharge their offset obligations if they elect to pay into the fund. A probable consequence of such a reform is that the prices of many different biodiversity credits can be expected to increase. While this would mean developers incur additional costs, higher credit prices would (1) create a stronger disincentive against further land clearing, (2) create a stronger incentive for landowners to establish BSAs and (3) will ensure the BCT is sufficiently resourced to establish a strategic offset portfolio using developer contributions. While critics of the BOS may argue that shifting the cost of environmental harm to developers will render certain projects unviable, the Inquiry should consider that placing checks on ecologically unsustainable development is the very purpose of the BOS.[22]

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[18] Each offset 'obligation' may consist of multiple types of biodiversity credits which require offsetting.

[19] It is noted that the 2019 Annual Report lists an additional 43 BSA applications in progress. Given the 2018 Annual Report listed 34 BSAs as being in progress, it is assumed that only a small proportion of the in-progress BSAs in the 2019 report represent new additions to the BOS.

[20] DPIE 2021, Strengthening the Biodiversity Offset Scheme, https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/strengthening-biodiversity-offsets-scheme-new-approach-to-developer-charges-210115.pdf

[21] DPIE 2021, Strengthening the Biodiversity Offset Scheme, https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/strengthening-biodiversity-offsets-scheme-new-approach-to-developer-charges-210115.pdf

[22] Thompson, A, 2020, 'Greatest handbrake to investment': NSW to review biodiversity offset scheme, *The Sydney Morning Herald*, published 6th August 2021, https://www.smh.com.au/national/nsw/greatest-handbrake-to-investment-deputy-premier-says-biodiversity-offset-scheme-is-broken-20210806-p58ggc.html

My research indicated that the significant upfront cost of biodiversity assessment is acting as a strong disincentive to landowners who may otherwise consider establishing a BSA. Further research into landowner participation within the BOS has supported this finding, and suggests that at the present time, participation in the scheme is limited to landowners with specialist legal or conservation knowledge.[23]

The cost of undertaking the required biodiversity assessment to register a Biodiversity Stewardship Site varies depending on the size of the land being surveyed, the diversity of native vegetation present and the number of threatened species whose presence is assessed. Assessors I interviewed advised that typical cost ranges from $20,000 to $50,000, but can easily be many times this for larger sites.

The illiquidity of the biodiversity credit market means that even in cases where landowners are willing to incur this expense to establish a BSA, then there is no guarantee that they will be able to sell their credits to a developer, and subsequently derive any income from managing their land for conservation. The ability of landowners to generate money from the scheme was further diminished in 2018, when the interest rate associated with the total fund deposit was lowered.[24] Generally speaking, this has meant that a larger number of credits must now be sold to clear the deposit threshold and actually allow landowners to derive an income from private conservation. This privileges landowners who are able and willing to register large blocks as BSAs, but diminishes the ability of smaller areas of habitat to be protected under the scheme.

4. Any other related matters

My research found the process of biodiversity assessment under the BOS to be complex, heavily dependent on the judgement of practitioners and often results in a confused understanding of development impacts to biodiversity. Impacts to biodiversity are assessed through a standardised methodology, the Biodiversity Assessment Method ('BAM'). The BAM provides assessors with instructions on how impacts to biodiversity are to be assessed at proposed development sites as well as instructions on how the biodiversity values of proposed BSAs should be appraised.

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[23] Plant, R, & Rouso, LE, 2021, We asked landowners how they feel about biodiversity offsets — and the NSW government has a lot to learn, *The Conversation,* https://theconversation.com/we-asked-landholders-how-they-feel-about-biodiversity-offsets-and-the-nsw-government-has-a-lot-to-learn-164934

[24] DPIE 2018, Total fund deposit and discount rate, https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/offset-obligations-and-credit-trading/total-fund-deposit

Five types of impact are considered by assessors:

- Direct Impacts.
- Indirect Impacts.
- Serious and Irreversible Impacts ('SAII').
- Prescribed Impacts.
- Significant Impacts (assessed under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) for projects which also trigger referral to the Commonwealth for approval.[25]

Direct Impacts to biodiversity are determined quantitatively, in terms of credits denoting either vegetation communities (ecosystem credits) or the habitat of particular threatened fauna or flora species (species credits). The BAM requires assessors to conduct vegetation integrity assessments for stands of native vegetation at a site and make an assessment of potential habitat for endangered species predicted within each habitat zone. Field measurements of vegetation quality and the results of fauna and flora surveys are inputted into the BAM-C, which determines the biodiversity value of a project site, expressed in terms of biodiversity credits.

Indirect Impacts, SAII, Prescribed Impacts, and Significant Impacts (in the case of referral under the EPBC Act) are assessed qualitatively against criteria established by the *Biodiversity Conservation Act 2016* (NSW) and the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth). While the inclusion of additional, specific impacts, especially SAII, provides a welcome, additional level of protection for sites of high biodiversity value, the cumulative set of assessment criteria against which different impacts are compared can at times result in an incoherent understanding of the impacts of developments on particular threatened species. For example, a given species or vegetation community may be assessed as 'not significantly impacted' by the criteria for SAII, but may simultaneously be 'significantly impacted' under the criteria established by the Commonwealth *Significant Impact Guidelines*.

Further adding to this confused description of impacts is the fact that the assessment of impacts to particular species is not automatically consistent with presence data collected by assessors during field surveys. Species which are not identified during field surveys are

[25] Due to the Bilateral Agreement between NSW and the Commonwealth, use of the BAM is approved as a means of evaluating biodiversity impacts under the EPBC Act, avoiding the need for double-assessment. Offset obligations settled through the BOS enable developers to likewise satisfy requirements to implement environmental offsets under the *EPBC Act Environmental Offsets Policy*. Due to the more stringent like-for-like requirements under the Commonwealth policy, offsets for species or communities which 'significantly impacted' under the EPBC Act must be offset against the higher, Commonwealth standards.

at times assumed to be present, based on the presence of particular habitat features or previous sightings recorded in the BioNet Atlas. Conversely, species which are identified in the course of fieldwork may be assessed as not directly impacted by habitat clearing if the available habitat is judged by the assessor to be inadequate.

Three further weaknesses of the qualitative assessment approach adopted stand out:

- Significant knowledge gaps remain with respect to understanding the distribution of, and vulnerability of, threatened species to further development. This means that the qualitative assessment of impacts to individual threatened species often takes place in the absence of reliable scientific data.[26] In such cases, assessors must attempt to make informed inferences on the likely presence or absence of particular species at a site and the impact a development may have on local biodiversity values. This places a significant emphasis on the judgement of individual assessors.
- The assessment of impacts for individual projects is a weakness of the impact assessment process generally. By limiting the focus to individual projects, no assessment of cumulative changes to landscapes are made. It further makes it more likely that assessors conclude that the impacts of particular projects on the threatened species present at a site are acceptable, as it is only in rare instances that any individual project will on its own be responsible for great disruption to a species habitat. Accretive loss of habitat is the likely consequence of this approach to impact assessment.
- The assessment of some impacts, in particular Indirect Impacts, was often cursory. Indirect impacts include the impacts to biodiversity that occur as a consequence of development, such as construction related noise and light pollution. Control and mitigation actions to respond to these impacts are often only briefly addressed in BDARs (if addressed at all). There is also little accountability on the part of proponents as to whether the mitigation commitments outlined in BDARs are implemented effectively.

The BAM rightly places a significant emphasis on in-field flora and fauna surveys. Field surveys typically require at least four days of cumulative monitoring, although the duration of fieldwork assessment could be much higher in the case of large projects. One case study I examined drew upon on 70 days of cumulative field assessment. While this rigour is a strength of the current assessment requirements, it directly contributes to the high cost of biodiversity assessment, limiting the ability of landowners to participate in the credit market.

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[26] Maron, M, Ives, CD, Kujala, H, Bull, JW, Maseyk, FJF, Bekessy, S, Gordon, A, Watson JEM, Lentini, PE, Gibbons, P, Possingham, HP, Hobbs, RJ, Keith, DA, Wintle, BA & Evans, MC 2016, 'Taming a Wicked Problem: Resolving Controversies in Biodiversity Offsetting', *Bioscience*, vol. 66, pp. 489-498.

In the case studies I examined as part of my research, assessors successfully identified a diverse range of native species at case study sites, typically several hundred fauna and flora species at each site. This implies that the process of biodiversity assessment under the BAM can credibly provide detailed information on a broad range of biodiversity values which may be present at project sites. It further speaks to the general competence of accredited assessors and their capacity to accurately assess the presence or likely presence of diverse threatened species in different environments.

The interviews I conducted with assessors highlighted several weaknesses of the BAM. These include:

- The BAM rules for assessment have been subject to frequent revisions since the introduction of the BOS in 2017. Notably, the BAM underwent a significant revision in 2020, less than three years after it was first introduced. Additionally, different elements of the BAM, such as the species listed as SAII entities and the advice issued on surveying particular species listed in BioNet are under continuous review. Assessors generally expressed frustration at the constantly shifting assessment requirements, one commenting 'to me it doesn't really matter what the method is or how to do it, as long as it is consistent'.[27]
- Field survey expectations are set by a combination of the explicit methodology outlined in the BAM, additional guidance documents prepared by the DPIE and the judgement of assessors. While the DPIE has prepared detailed survey advice since the introduction of the BOS, for example with respect to threatened plants, bats and threatened frogs, to date no centralised and comprehensive set of survey guidance has been developed. Problematically, some of the current survey guidance documents relied upon by assessors are dated and in need of review. Notably, the current advice for surveying arboreal mammals and birds is provided for in the *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities*, a document which was prepared as a working draft in 2004 by the (then) NSW Department of Environment and Conservation.[28] The lack of clear and consistent guidance on survey expectations means that different assessors (and firms) differ in their use of survey techniques as well as in the total survey effort employed at comparable sites. Some assessors expressed concern with respect to the adequacy of some survey methods, 'in real terms the effort is paltry…it's pretty easy to put in minimal effort and to get a result'.[29] Concern with the

[27] Interviewee 2, accredited assessor

[28] DEC 2004, Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft), https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/draft-threatened-biodiversity-survey-guide.pdf

[29] Interviewee 5, accredited assessor

variation of survey techniques used in different assessments was also expressed by regulators who review biodiversity assessments.

- Assessors are reluctant to seek input from regulatory agencies or consent authorities due to both the inconsistent advice they receive and the significant delays it takes to receive advice. Most assessors I interviewed advised that regulators typically responded only after several weeks and this made consultation impractical, particularly when surveys for ecological assessment are under pressure by client expectations and survey windows are limited. One assessor complained, 'you just make a decision and hope they [the consent authority] accept it'.[30]
- Different consent authorities, in particular Local Governments, differ greatly in their capacity to interpret and review BDARs.

Recommendation 5: DPIE should prioritise reviewing and updating existing environmental survey guidance materials. Where possible, endorsed advice on survey methods should be consolidated. This would improve the consistency of biodiversity impact assessment between different projects and would provide assessors with greater confidence when conducting field work.

[30] Interviewee 7, accredited assessor