

Fundamental Principles for Best Practice Biodiversity Offsets

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At a basic level, biodiversity offsets involve measures designed to benefit biodiversity at one site in order to compensate for actions that are detrimental to biodiversity at another site. The measures designed to benefit biodiversity may involve restoration of an ecological community, protection of additional habitat for a threatened species, or work that eliminates threats to biodiversity such as introduced pests and weeds. The actions being offset are typically developments such as residential subdivisions or activities such as mines.

Offsetting has gained traction throughout Australia as a means of facilitating developments that may otherwise be rejected on the grounds that they have unacceptable impacts on biodiversity. At a time when Australia's unique terrestrial and marine biodiversity is in decline, it is worth examining how biodiversity offsets work, and whether real and enduring environmental outcomes can be achieved through offsetting.

How offsetting is undertaken is highly variable across Australia and can depend on the type of project, the proponent and the jurisdiction. Offsets are often negotiated on a case by case basis between the regulator and the development proponent. Some jurisdictions apply policy guidelines, assessment methodologies, or offset ratios such as one hectare cleared requires 5 hectares to be restored. Although there are certainly emerging trends and themes in offsetting, at present it is done on a relatively ad hoc basis with little consistency in terms of ecological credibility, rigour, enforceability and legislative parameters.

Most jurisdictions in Australia currently have, or are developing, an environmental offset policy. Of concern is the current trend for jurisdictions with existing policies to weaken biodiversity protection by requiring less rigorous offsetting, or exempting certain developments from offsetting rules.¹ Given the significant policy focus on offsetting, this article will outline some of the fundamental principles that ought to underpin a best practice offsetting scheme and highlight how some existing State schemes are currently failing to implement these principles. Accordingly, this article makes the case for the development of a national standard that would provide a robust and science-based offsetting model for States and Territories to base their own offsetting regimes on.

1. Biodiversity offsets must only be used as a last resort and clear limits must be placed on the use of offsets

Before offsetting is considered as an option, every effort should be made to avoid and then mitigate the impacts of the proposal on biodiversity. This mitigation hierarchy should be clearly set out in relevant legislation as a mandatory pre-condition before any offsetting option is considered. Appropriate guidance should be provided to proponents on how they can demonstrate their endeavours to genuinely avoid and mitigate aspects of the proposed development.

In addition to adopting a mitigation hierarchy, offset schemes must have clear parameters. The use of 'red flag' or 'no go' areas is essential to make it clear that there are certain matters in relation to which offsetting cannot be an appropriate strategy. This is particularly relevant to critical habitat and threatened species or ecological communities that can withstand no further loss.

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The NSW Government has recently released a *Draft NSW Biodiversity Offsets Policy for Major Projects*. The Policy is based on seven principles, one of which states:

Before offsets are considered, impacts must first be avoided and unavoidable impacts minimised through mitigation measures. Only then should offsets be considered for the remaining project.

Despite this principle, the policy states:

Where all feasible measures have been taken to avoid or minimise the impacts, offsets should be used to compensate for the remaining impacts. If necessary, proponents will be required to clearly explain why certain impacts cannot be avoided or minimised further. Some impacts are more complicated or severe, such as those that are likely to cause extinction of a species from an area or significant reductions in vegetation bordering streams and rivers. These will require additional consideration by the consent authority before the option of offsetting is used.

While this policy does apply the mitigation hierarchy, proponents may not be required to justify why they cannot avoid or mitigate the impacts and the principle of 'red flags/no go' areas is overridden by the implication that offsets could still be considered even where the project could cause a local extinction.

2. Offsets must be based on sound ecological studies and principles

Scientific reviews of offsetting note serious concerns as to whether biodiversity offsetting is actually possible given the unique nature and complexity of biological systems. Offset regimes assume biodiversity is compressible, i.e. individuals of certain species can move into existing habitat areas, as well as portable, i.e. habitats can be re-created elsewhere.²

However, a 2012 review of restoration ecology literature concluded that:

Confidence in the ability of restoration to deliver genuine biodiversity offsets is undermined by the problems of defining and measuring the biodiversity values that are lost and gained, considerable uncertainty surrounding the effectiveness of restoration techniques, and long time-lags. The increasingly broad application of offsetting, often with limited scientific support, is therefore of concern.³

Currently, there is a dearth of evidence to show that offset schemes actually achieve the intended biodiversity outcomes. The field of restoration ecology is still relatively new, and even those schemes that have been in existence for some time cannot show conclusive results in terms of beneficial outcomes.⁴ It is therefore important that offsetting schemes provide for adequate monitoring and evaluation.

At the very least, any ecologically credible offset scheme must enshrine the requirement of like-for-like offsets. This will ensure, as far as possible, that the environmental values of the site being used as an offset are equivalent to the environmental values impacted by the proposed action. Otherwise the resulting action is not an offset. A like-for-like requirement is absolutely fundamental to the ecological integrity and credibility of any offset scheme.

In NSW, the Draft Framework for Biodiversity Assessment (FBA)⁵ which underpins the *Draft NSW Biodiversity Offsets Policy for Major Projects* expands the like-for-like concept almost beyond recognition. Instead of offsetting species for species, the FBA provides that vegetation of the same *class* can be included in the offset credit profile and stretches the nexus even further by allowing vegetation from the same *formation* for ecosystem credits. Similarly, in relation to individual threatened species, the FBA does not require offsets to apply to the same species, but allows species from the same *order* for fauna species and the same *family* for flora species. These proposed variation rules allow offsetting from very broad ecological categories that may have a tenuous link to the actual species or population being impacted. Some orders may contain a diverse range of species. For example, the order *Diprotodontia* (meaning 'two front teeth') includes 120 marsupial mammals such as kangaroos, wallabies, possums, koalas, wombats, and many others. The FBA would therefore potentially allow impacts on koalas (which is listed as vulnerable under federal law) to be offset by actions taken to conserve a population of kangaroos. This outcome could have dire consequences for koala populations in NSW. The inclusion of variation rules such as these undermines the ecological integrity of the scheme.

Another emerging trend articulated in the *Draft NSW Biodiversity Offsets Policy for Major Projects* is the generation of offset credits on previously mined land. Research to date suggests that there are few, if any, successful examples of rehabilitation of open cut mining areas. Evidence given in *Hunter Environment Lobby v Minister for Planning & Ashton Coal Operations Limited*⁶ demonstrated that there is no certainty that reconstructed landscapes can be returned to the same structural, hydrodynamic or ecological function that existed prior to mining. Specifically, hydrologist and soil engineer, Associate Professor Willem Vervoort noted that “Existing research on mine rehabilitation mostly suggests deficiencies in the nutrient and or soil quality of rehabilitated sites, even after application of remedial nutrients”.

Associate Professor Vervoort went on to comment:

the few long term studies suggest that short term success actually might inhibit long term sustainability, as the initial rapid growth supported by fertilizer applications to manage erosion moves the ecology in a specific direction. The resulting ecological community is not necessarily the most stable community in the long term. This could lead to dramatic changes (vegetation dieback) at a later stage due to insect damage, age or lack of nutrients. Given how new the science of mine rehabilitation is (about 20 years) there is also not much long term research available to develop a clear understanding of landscape development post mining. As a result it is not possible to verify if the proposed rehabilitation will actually succeed.

Given that the purpose of offsets is, at a minimum, to create a no net loss situation, and is often to create an environmental gain, it is inappropriate to permit an offset technique that is unproven and, based on current evidence, unlikely to result in ecologically sustainable vegetation communities within any reasonable timeframe.

3. Indirect offsets must be strictly limited

There should be extremely minimal use of indirect offsets or supplementary measures under any offset scheme. This is due to significant uncertainty of linkages with impacts, and higher risk that biodiversity outcomes may not be achieved.

Indirect offsets allow the use of related activities, such as research, in place of directly offsetting the biodiversity loss. The *Draft NSW Biodiversity Offsets Policy for Major Projects* allows for a proponent to satisfy 100% of their offset requirements with supplementary measures rather than direct offsets.

Similarly, the *Environmental Offsets Act 2014*, which provides a legislative basis for offsets in Queensland, provides that offsets can either be proponent-driven whereby the proponent identifies a suitable offset that is approved by the Department of Environment and Heritage Protection (EHP) or by a financial payment to an offset fund controlled by EHP or the local government.⁷

Four key concerns regarding the use of indirect offsets are:

1. It is very difficult, if not impossible, to measure the environmental gains when the results of indirect offsets are balanced against the losses occasioned by a development.
2. The relationship between many types of indirect offsets and the environmental gain sought to be achieved is dependent on many contingent and uncertain factors. Many proposed schemes currently contemplate, for instance, that funding for research may comprise part of an acceptable offset. In order to achieve an effective environmental outcome, however, research must not only be performed to an acceptable level, but it must successfully identify information that can be used for environmental gain that is subsequently implemented, and there must be systems in place for evaluation of its impacts. This, in turn, is dependent on adequate funding. The uncertainty inherent in this process renders such forms of indirect offsetting ill-suited to achieving enhanced environmental outcomes.
3. Effective offsets must be additional to activities that would have been undertaken in the normal course of events. It is difficult to demonstrate that indirect offsets comprise the requisite degree of additionality.
4. The use of indirect offsets contradicts the principle of ‘like-for-like’ offsetting that should be a fundamental component of any offset strategy.

Also of concern is the emergence of the principle of ‘discounting’ in NSW. The principle allows for offsets to be discounted where significant social and economic benefits accrue to NSW as a consequence of the proposal. This principle potentially allows environmental concerns to be overridden by socio-economic considerations. As biodiversity has not been given a dollar value, the ledger will always tip in favour of major projects if the criteria are economic. Such economic prioritisation policies are likely to contribute to the incremental and permanent loss of significant biodiversity in NSW, and completely undermine the ecological credibility of the purportedly objective methodology by which offsets are determined.

4. Offsetting must achieve benefits in perpetuity

An offset area must be legally protected and managed in perpetuity, as the impact of the development is permanent. Offset areas should not be amenable to being offset again in the future.

Queensland’s *Environmental Offsets Act 2014* provides for the identification of offset corridors and landholders in these corridors can voluntarily enter into offset management plans in return for payments from the Offsets Fund. However, these offset areas are not set aside in perpetuity and can be revoked, although to do so would require an additional offset. Furthermore, there is no requirement to identify offset corridors in regional or local planning instruments which means that development can be planned in offset corridors.

In NSW, a decision of the Planning Assessment Commission to approve the expansion of an open cut coal mine over land previously set aside as an offset led to legal proceedings in the Land and Environment Court⁸ and the NSW Court of Appeal.⁹ Rio Tinto sought approval to open cut mine a biodiversity offset area containing an endangered ecological community, the Warkworth Sands Woodland, and threatened animal species including the squirrel glider and the speckled warbler. The woodland is unique to the area and only 13% of the original forest remains. Rio Tinto had previously promised to permanently protect this area under a Deed of Agreement with the NSW Government. The relevant Minister amended the agreement to allow the offset to be mined. When project approval was granted, the local community at Bulga commenced Court proceedings and were successful in having the approval overturned. The Land and Environment Court found that the project would have an unacceptable impact on biodiversity, particularly the Warkworth Sands Woodland, and this could not be justified by the economic benefits of the project. On appeal, the NSW Court of Appeal upheld the decision to reject the application. In response, the NSW Government has amended the law to attempt to make the economic value of the resource the primary consideration when assessing certain mining applications. Rio Tinto has subsequently re-lodged an application to mine the offset area and a decision is pending.

In South Australia, the BHP Billiton Roxby Downs Olympic Dam Expansion project, which proposed to clear over 17,000 hectares of vegetation, drew criticism from the community because it was unclear how proposed offsets would be managed in perpetuity to provide a significant environmental benefit.

Unless biodiversity offsets can be secured through appropriate legal mechanisms, the environmental outcomes of offsetting will be uncertain. The Bulga example above demonstrates that Deeds of Agreement are not a suitable mechanism for securing offsets as they lend themselves to being amended or revoked by the relevant Minister. There are other mechanisms that are more appropriate, such as BioBanking Agreements¹⁰ and Property Vegetation Plans¹¹ in NSW, both of which can last in perpetuity and are registered on title.

5. Offsets must be based on principles of net gain

Relevant legislation must require any offset scheme to maintain or improve environmental outcomes, instead of simply requiring ‘no net loss’ or ‘maintaining viability’. Preferably, the requirement would be to enhance environmental outcomes. This acknowledges current trajectories of biodiversity loss, and that positive action is required to halt and reverse the trend.

The relevant standard that an offset scheme seeks to meet is important because it will determine what level of action is necessary at the offset site. For example, when employing the ‘maintain or improve’ standard, there will be a net loss in biodiversity values at the development site and a gain in biodiversity values at the offset site due to effective management actions. To maintain or improve biodiversity values overall, the total gain for

biodiversity achieved through management activities must equal or exceed the total loss. In Queensland, the relevant standard is lower. The *Environmental Offsets Act 2014* states that a conservation outcome is achieved for a particular matter if the offset is selected, designed and managed to maintain the viability of the matter.¹²

Many offsetting mechanisms are underpinned by a scientific methodology that allows the impacts of the proposed development on biodiversity to be measured and quantified so that appropriate offset sites and management activities can be objectively determined.¹³ Such methodologies are critical to determining the appropriate size of an offset site, the ecological communities and populations it should contain and any management activities that will be necessary to ensure the offset meets the relevant standard (whether it be 'no net loss' or 'maintain or improve' or some other standard).

Not all offsetting schemes employ assessment methodologies, with the result that it can be unclear upon what criteria offset sites are selected and management actions determined. Where a methodology does exist, it is essential that it is applied consistently and accurately, by people who are trained in the use of the methodology.

6. Offsets must be additional

Any offset action must be additional to what is already required by law. The requirement of 'additionality' must be based on clear criteria to ensure that offsets are not approved unless they provide a conservation benefit additional to what would otherwise occur.

In the ACT, most urban development has an impact on the nationally listed threatened Box Gum Woodlands, native grasslands or threatened species such as the striped legless lizard. However, the ACT Government has applied the Federal Policy on Biodiversity Offsets in contravention of the principle of additionality by offsetting the impacts of developments on threatened species with management actions in existing nature reserves. For example, a proposed development in North Watson has been permitted because of a biodiversity offset in the nearby Justice Robert Hope Park.¹⁴

This is despite the fact the Federal Policy requires offsets to deliver gains in biodiversity that would not have otherwise occurred and recognises that this generally prohibits establishing offsets in existing nature reserves.

7. Offset arrangements must be legally enforceable

Any offset scheme must be underpinned by strong enforcement and compliance mechanisms in legislation, with adequate resourcing, established from the outset.

It has been noted¹⁵ that the effectiveness of offset regimes is undermined by non-compliance and lack of enforcement of offset conditions. Offsets are inherently difficult to monitor and enforce. This is because there is a variable lag time between offsets being implemented and ecological outcomes being achieved. Many studies suggest this lag time may be anything from 20 to 150 years.¹⁶ Given the inconsistency between project implementation and environmental benefit, it is possible that certain target species will never become established and the offset will not be functional within a practical timescale. This is particularly problematic for species where an immediate decline in habitat availability may cause regional extinction before the time lag in resource availability can be overcome.¹⁷ In NSW, current major project approvals often consider offset conditions to be complete once initial vegetation has been established or rehabilitation has been undertaken for a period of 5-10 years. This is clearly insufficient time to establish whether the offset has achieved intended environmental outcomes, and complied with legal requirements.

Of equal importance is the timing of offsets. Developments relying on offsets should not be approved until appropriate offset sites have been identified and assessed as adequate. Otherwise, there is no guarantee that the offset will be established.

In recent Federal Court proceedings¹⁸ the Northern Inland Council for the Environment challenged Commonwealth Government approvals for two coal mines in the Leard State Forest near Boggabri in north-western NSW.

Together, the projects will result in the clearing of 626 hectares of the critically endangered Box Gum Woodland and 2315 hectares of habitat for the endangered Swift Parrot, the endangered Regent Honeyeater, the vulnerable Greater Long-eared Bat, and the endangered climbing plant species *Tylophora linearis*.

The group argued that the Minister made a legal error by not requiring independent verification of the proposed biodiversity offsets before the approval was granted, rendering the offset conditions imposed uncertain. However, the Court found that the Federal Environment Minister had the power to approve the clearing of the Leard State Forest before biodiversity offsets have been established. The Judge noted “this would undoubtedly be undesirable from the perspective of environmental protection and preservation...”¹⁹ but was nevertheless permitted by the law.

Conclusion

None of the offset regimes currently in place throughout Australia address all the fundamental principles outlined above. This is particularly concerning given the current moves towards bilateral agreements allowing federal environmental approvals to be devolved to State or Territory governments. The Federal Government developed the EPBC Act *Environmental Offsets Policy* in 2012²⁰ which applies to offsetting significant residual impacts on matters of national environmental significance. However, where bilateral agreements have been signed, the offset policy of the relevant State or Territory can be accredited, even where the regime is weaker than the Federal Policy. In fact, the NSW approval bilateral agreement proposes to accredit the *NSW Biodiversity Offsets Policy for Major Projects* even though it is still in draft form and proposes to weaken the existing offsetting regime in NSW.

Last year the Productivity Commission stated that “a dedicated and independent review of offset arrangements is warranted to examine offset policy objectives, the quantitative methodologies used to identify suitable offsets, the merits of offset markets and the case for establishing a single, national offsets framework”.²¹ To date, there have been no moves towards undertaking such a review. However, a review of this kind would be an important first step in developing a best practice national standard upon which State and Territory offsets legislation could be based. Until such a standard is in place, accreditation of State standards should not occur.

Endnotes

¹ See, for example, the *Draft NSW Biodiversity Offsets Policy for Major Projects* at www.environment.nsw.gov.au/biodivoffsets/biooffsetspol.htm and the *Environmental Offsets Act 2014* (Qld) at www.legislation.qld.gov.au/Acts_SLs/Acts_SL_E.htm. The *Environmental Offsets Act 2014* (Qld) does not apply to major projects assessed by the Coordinator General. Therefore, less rigorous offsetting requirements can be placed on major projects.

² Bedward et al, “Simple modelling to assess if offsets schemes can prevent biodiversity loss, using examples from Australian woodlands”, (2009) *Biological Conservation* 142(11), pp. 2732-2742.

³ Maron et al, “Faustian Bargains? Restoration Realities in the Context of Biodiversity Offset Policies” (2012) 155 *Biological Conservation* 141.

⁴ For example, see: Maron et al, “Can Offsets Really Compensate for Habitat Removal? The Case of the Endangered Red-Tailed Black Cockatoo” (2010) 47 *Journal of Applied Ecology* 348, at 348; Maron et al, “Faustian Bargains? Restoration Realities in the Context of Biodiversity Offset Policies” (2012) 155 *Biological Conservation* 141, at 144; Gibbons & Lindenmayer, “Offsets for Land Clearing: No Net Loss or the Tail Wagging the Dog” (2007) 8(1) *Ecological Management and Restoration* 26; Bekessy et al, “The Biodiversity Bank Cannot be a Lending Bank” (2010) 3 *Conservation Letters* 151; Ambrose, Richard F, “Wetlands Mitigation in the United States: Assessing the Success of Mitigation Policies”, (2000) *Wetlands* (Australia) 19(1); Lake, PS, “On the Maturing of Restoration: Linking Ecological Research and Restoration” (2001) *Ecological Management and Restoration* Vol. 2, No. 2; Chapman M.G. and Underwood A.J. “The need for a practical scientific protocol to measure successful restoration” (2000) *Wetlands* (Australia) 19(1), 28-45.

⁵ Draft Framework for Biodiversity Assessment for assessing and offsetting State Significant Development and State Significant Infrastructure, NSW Government, March 2014. Available at: www.environment.nsw.gov.au/biodivoffsets/1482fba.htm

⁶ *Environmental Offsets Act 2014* (Qld), ss. 18(2), 21, 23, 24.

⁷ [2011] NSWLEC 221.

- ⁸ *Bulga Milbrodale Progress Association Inc. v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48.
- ⁹ *Warkworth Mining Limited v Bulga Milbrodale Progress Association Inc.* [2014] NSWCA 105.
- ¹⁰ Under the *Threatened Species Conservation Act 1995* (NSW).
- ¹¹ Under the *Native Vegetation Act 2003* (NSW).
- ¹² *Environmental Offsets Act 2014* (Qld), s. 11.
- ¹³ For example, the *Environmental Outcomes Assessment Methodology under the Native Vegetation Act 2003* (NSW), the Biocertification Methodology under the *Threatened Species Conservation Act 1995* (NSW) and the *BioBanking Assessment Methodology under the Threatened Species Conservation Act 1995* (NSW).
- ¹⁴ Dr Philip Gibbons and Professor Jochen Zeil, ANU, www.canberratimes.com.au/comment/its-becoming-harder-to-see-the-trees-for-the-revenue-20140128-3112b.html
- ¹⁵ Burgin, "BioBanking: An environmental scientist's view of the role of biodiversity banking offsets in conservation", (2008), *Biodiversity Conservation* 17: 807.
- ¹⁶ Gordon et al, 2011; Maron 2010.
- ¹⁷ Bedward et al. "Simple modelling to assess if offsets schemes can prevent biodiversity loss, using examples from Australian woodlands", (2009) *Biological Conservation* 142(11), 2732; Maron et al, "Can Offsets Really Compensate for Habitat Removal? The Case of the Endangered Red-Tailed Black Cockatoo" (2010) 47 *Journal of Applied Ecology* 348.
- ¹⁸ *Northern Inland Council for the Environment Inc v Minister for the Environment* [2013] FCA 1418 and *Northern Inland Council for the Environment Inc v Minister for the Environment* [2013] FCA 1419.
- ¹⁹ *Northern Inland Council for the Environment Inc v Minister for the Environment* [2013] FCA 1419 at 40.
- ²⁰ See: www.environment.gov.au/resource/epbc-act-environmental-offsets-policy
- ²¹ Productivity Commission 2013, *Major Project Development Assessment Processes*, Research Report, Canberra, at page 213, available at: www.pc.gov.au/data/assets/pdf_file/0015/130353/major-projects.pdf

