

Using biodiversity offsets to obtain “win-win” outcomes for biodiversity conservation and economic production

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Introduction

A recent Environment Court decision (W081/2007, 19 September 2007) supported the use of biodiversity offsets as a tool for managing indigenous biodiversity values within economic production systems such as sheep and beef farms and plantation forests. In their decision, the Environment Court stated (para 62):

“In our view, the Norton proposal (the use of biodiversity offsets) achieves a sound and sustained balance between enhancing the productive capacity of the property, and enhancing the quality of its remaining indigenous vegetation as a source of biodiversity and habitat. We understand the DOC position, which arises from its advocacy role. But in the overall scheme of the RMA it is too narrowly focused. In making our decision on this application, we have to encompass the wider view of sustainable management.”

This Environment Court case arose from an application by the Bayly Trust to clear kanuka shrubland/forest on Waikatea Station, a sheep and cattle property located at Ruakituri, some 30 km north of Wairoa. As part of an ongoing programme to increase the productivity of the property they also proposed to protect a significant area of the property for soil and water, and biodiversity conservation purposes. In this article I review the background to the case, the biodiversity offset package proposed, and the implications it might have for future sustainable land management.

Waikatea Station

Waikatea Station (3570 ha) is located in the Tiniroto Ecological District (Wairoa Ecological Region), in northern Hawke's Bay, and is typical of sheep and cattle properties that occur through the hill country between Napier and Gisborne. The topography is generally steep, with sharp hill crests separated by often incised river systems. The highest point on Waikatea Station, Te Tahī, is at 537 m, while the lower boundary of the property at Ruakituri in the north is at about 100 m and in the south at the Mangaaruha River is at about 80 m. Rainfall generally decreases across the district from west to east, with Waikatea Station estimated to receive an annual average rainfall of 1400–1600 mm. Most rain falls in winter, while summers can be dry although drought is usually not a problem. From a farming perspective, Waikatea

Station is considered a well balanced property (Perley & Lyall 2005). In 2004, the property wintered 19,000 stock units (43% sheep and 57% cattle), an increase of 3,800 stock units over that carried in 2001 under the previous owner, mainly reflecting the development of some areas of kanuka shrubland. It is estimated that the pasture present is capable of carrying 10–11 stock units per hectare (Perley & Lyall 2005).

Historical and current vegetation patterns

The indigenous vegetation of Waikatea Station is dominated by shrubland and forest (Norton 2007). Indigenous herbaceous communities are rare, comprising small areas along exposed bluffs and very limited areas of wetland vegetation in valley bottoms or associated with artificial wetlands (e.g., stock water ponds). The most widespread vegetation type is pasture (2537 ha), which has varying amounts of shrub species (mainly kanuka and tauhinu) scattered through it, and also includes farming infrastructure (yards, buildings etc). Kanuka shrubland sprayed by a previous owner is also included here as pasture. At least five main types of indigenous woody vegetation are present and are now described, although intergrades between these types are common.

Podocarp-broadleaved forest (42 ha) is characterised by emergent rimu, kahikatea, matai and rewarewa (25–35 m) above a diverse canopy dominated by tawa but also including titoki, kowhai, pukatea and hinau (15–25 m). Tree ferns can be locally abundant and nikau is also present. Regenerating podocarp forest (72 ha) occurs primarily in riparian areas close to the main streams, but also extends out onto lower slopes. Totara is usually the dominant species, but small areas of kahikatea are also present and kanuka can be important. This vegetation type grades into kanuka forest, where abundant young totara are growing through the kanuka canopy. Broadleaved forest (65 ha) is quite variable and can include a range of species (rewarewa, lacebark, kowhai, putaputaweta, kohuhu) usually growing with kanuka and forming a lower canopy (10–20 m). As with regenerating podocarp forest, this forest type grades into kanuka forest. Kanuka forest/shrubland (816 ha) is the most widespread forest type and appears to have regenerated largely on sites that were previously grassland. Typically kanuka is the sole canopy species (10–20 m), with a floristically simple understorey usually comprising mingimingi or hookgrass. Manuka shrubland (37 ha) is of limited extent being largely confined to well drained ridge crests and north-facing slopes. Manuka is usually the dominant species, forming a low canopy 2–6 m high.

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View across Waikatea Station showing forest remnants.



Podocarp-broadleaved forest remnant with mature rimu.

At present the indigenous forest and shrubland on Waikatea Station is heavily undergrazed by cattle, goats and sheep. The dominant understorey plants are species of low palatability, especially mingimingi and soft mingimingi. Palatable species, including most of the podocarp-broadleaved forest canopy dominants such as totara, titoki, kowhai, tawa, rewarewa, pukatea, maire, kahikatea, matai, rimu are very rare or absent. Undergrazing is used as part of farm management, especially during winter when feed is in short supply. Under this regime, forest regeneration is unlikely and, at least for the kanuka forest, canopy collapse is possible once the current mature kanuka start to senesce.

Change in the cover of indigenous woody vegetation through time was assessed from aerial photos flown in 1945, 1975, 1995 and 2003 (Norton 2007). Exotic woody species such as gorse and broom are a very minor part of the current Waikatea Station vegetation and it seems that this station has never had major infestations of these species. Therefore all woody vegetation observed on the aerial photos was assumed to be dominated by indigenous species. All aerial photos were orthorectified prior to analysis.

The historical aerial photo sequence shows some substantial changes in the cover of woody vegetation through time. In 1945, only 309 ha of Waikatea Station (8.7%) had woody vegetation compared to 1327 ha (37.2%) in 1975, 1358 ha (38.0%) in 1995, and 1033 ha (28.9%) in 2003. Four main conclusions can be drawn from the aerial photo assessment:



Heavily undergrazed kanuka forest with no regeneration of canopy dominants.

- The currently extensive areas of woody vegetation on Waikatea Station have developed largely since 1945 when the property was predominantly covered by pasture.
- The spatial extent of woody vegetation has been dynamic through time; some areas have increased in woody cover while others have decreased, reflecting the differing spatial emphasis of farm management through time.
- The areas of woody vegetation that are apparent from the 1945 aerial photos are those that have been mapped as podocarp-broadleaved forest, regenerating podocarp forest, and broadleaved forest, and it is these areas that have the greatest historical continuity with the pre-human forests of Waikatea Station and form the nucleus of the biodiversity offset proposal outlined below.
- In contrast the extensive areas of kanuka forest present today (816 ha) are historically young (no more than 30-60 years old), and almost all have formed on areas that were previously pasture and thus have little or no historical continuity with the pre-human forests of Waikatea Station. It is some of these areas that were proposed for clearance, while the remainder are proposed for protection in the biodiversity offset proposal.

The resource consent application

In November 2004, the Bayly Trust applied to Wairoa District Council for resource consent to clear 536 ha of kanuka for pasture reestablishment. This application developed out of reviews of soil and water, and biodiversity conservation goals for the property (Stokes 2004, Perley & Lyall 2005) and included the proposal to protect 674 ha of forest remnants and riparian zones. Following the resource consent hearing at which the Department of Conservation (DOC) opposed the application, the Council granted resource consent in March 2006 which, subject to conditions, authorised the clearance of 356 ha, being a compromise between the initial Bayly Trust proposal and suggestions made by the Hawke's Bay Regional Council (Stokes 2004). DOC then appealed this decision to the Environment Court which heard the case in July/August 2007, with the Court's decision being released on 19

September 2007.

In preparing evidence for the Environment Court hearing on behalf of the Hawke's Bay Regional Council and Wairoa District Council, I revisited the original proposal for clearance and protection, and outlined a new proposal for Waikatea Station. In this new proposal 354 ha of kanuka forest on Waikatea Station was identified for clearance and re-establishment of pasture, while 799 ha of forest and shrubland were identified for protection through covenanting and fencing as a biodiversity offset for clearance. The biodiversity offset approach was strongly criticised by DOC witnesses at the hearing who claimed that it would result in a net loss of biodiversity on the property and in the ecological district. Notwithstanding this criticism, the Court accepted the biodiversity offset case and granted consent for the revised proposal as outlined in this article.

The significance of the kanuka forest

The first matter that was at issue before the Environment Court was whether kanuka forest was significant for the purpose of section 6(c) of the RMA, which requires as "Matters of national importance" that:

"In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

(c) *The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna"*

My view was that these areas are important, but are not necessarily significant in the context of Section 6 (c) when compared to the higher value podocarp-broadleaved and regenerating podocarp forest in adjoining areas. I did not accept the view that their inclusion in a Recommended Area for Protection (RAP) that arose from a Protected Natural Areas Programme (PNAP) survey necessarily signified that all of these areas were significant.

This point was not finally resolved, but the Court preferred to take an approach which assumed that the areas involved did qualify as significant (para 53):

"While we are prepared to accept, for the purposes of this discussion, the Clarkson/Ward/Shaw view that the kanuka forest might be significant in s6(c) terms, we do not accept that the effects of the proposed clearance are such as to justify refusal of the consent"

What does protection mean?

The Act requires *protection* of areas of significant

indigenous vegetation. The Court followed previous case law in finding that this meant "save from harm" (para 48). However, the Court accepted the argument made by the legal counsel for the Hawke's Bay Regional Council that this did not require all parts of each area of significance to be preserved, but rather, required that the overall significance and biodiversity values of the areas of significance on the station be protected (see para 52 of the decision). It was in this context, that the Court accepted that some areas could be cleared provided that the overall significance remained intact. The proposed biodiversity offsets would also serve to avoid, remedy or mitigate the effects of the clearance.

Biodiversity offsets

The concept of biodiversity offsets in the New Zealand context has been reviewed by Borrie *et al.* (2004) and Christensen (2007). Biodiversity offsets have been defined by ten Kate (2004) as conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to ensure no net loss of biodiversity. Offsets are commonly referred to as environmental compensation in New Zealand.

In the Bayly Trust case the Environment Court contrasted the different perspectives on biodiversity offsets (para 39):

"The concept of providing compensation or offsets for an activity's adverse effects that cannot be avoided, or otherwise remedied or mitigated has attracted a good deal of judicial and academic comment. Its harsher critics decry it as being but the thinly disguised buying of a resource consent. Some supporters rationalise it as a remedy for those adverse effects. Others do not feel the need to fit it with the rubric of ...avoid, remedy or mitigate but are content to simply see it as a matter relevant to the ultimate decision of whether the proposal as a whole promotes sustainable management in terms of s5."

The idea of biodiversity offsets or environmental compensation has been considered in several recent Environment Court decisions prior to the Bayly case, the most recent being J F Investments Limited v Queenstown Lakes District Council (C48/2006). In their decision on this case the Court defined environmental compensation as (para 8):

"Any action (work, services or restrictive covenants) to avoid, remedy or mitigate adverse effects of activities on a relevant area, landscape or environment as compensation for the unavoided and unmitigated adverse effects of the activity for which consent is being sought."

In the J F Investments Limited v Queenstown Lakes District Council the Court noted that the concept of environmental compensation was embodied within the sustainable management purpose of the RMA and could

be included within the definition of 'remedy'. In particular the Court noted (para 22):

"The very wide and inclusive definition of 'effects' in section 3 of the Act suggests that effects in section 5(2)(c) may be in addition to characteristics specifically mentioned (direct or indirect, simple or confused)." and "Since the RMA recognises such causal complexity we consider it also contemplates complex solutions to achieve better overall environmental outcomes."

The Court also noted in this case that it is not uncommon for the Environment Court to allow some adverse effects, even on matters of national importance (Section 6 matters), if there is sufficiently useful and appropriate offsetting or remedial works. The Court accepted that while the valuation of environmental compensation is complex, this should not in itself prevent the assessment being undertaken (para 37).

"The difficulties of obtaining such (e)valuations must not prevent the attempt if sustainable management of resources requires it. The practical answer is usually that if the proposed remedial or mitigatory action is the repair of damage of the same kind as the adverse effects of the activity, it is easier to accept as not only relevant, but reasonably necessary as well. Similarly, if the proposed remedy is also in the same area, landscape, or environment then its benefits, compared with the costs of the proposed activity, are more readily seen. Conversely, if the offered environmental compensation is too far in distance, kind or quality from the adverse effects caused by the proposed activity then it may be no longer reasonably necessary, but merely expedient for the developer to offer."

In the Waikatea Station case the Environment Court found it to be a more clear-cut case than in J F Investments to accept the biodiversity offset proposal commenting that (para 41):

"Here we see the issue as rather more clear-cut than was the case in J F Investments. The offered compensation is not off-site, if site is considered in terms of a planning entity, even though it affects different parts of a large, 3500ha property. It is certainly within the same area, landscape and environment. Further, what is being offered is of the same kind as the activity in question, in that it is designed to enhance the quality of areas of indigenous vegetation. And the area being offered as the offset is of a greater scale - ie 799ha, as against 354ha to be cleared."

The reason I was able to support the Bayly Trust's case before the Environment Court (albeit on a slightly modified basis from the District Council's decision) is that in my opinion the biodiversity offsets proposed more than compensated for the adverse environmental effects of the 354 ha of vegetation clearance for which consent was being sought. My revised proposal for protection differed from the original protection proposal (Perley & Lyall 2005) in

both area (a greater area) and in the spatial distribution of protected areas (fewer more compact areas). This was done to ensure that the protected areas were:

1. Inclusive of all remaining areas of remnant podocarp-broadleaved forest.
2. Fully representative of the range of environments that occur on Waikatea Station (especially with respect to altitude, aspect and landform).
3. Large enough to be well buffered and have good resilience (the ability to recover from natural disturbances).
4. Providing connectivity between protected areas, and with other areas of indigenous forest outside the property, both for aquatic and terrestrial biota.
5. Providing habitat for nationally uncommon species, especially fauna (e.g., kereru).

The biodiversity offset that the Environment Court accepted proposed that the biodiversity values within Waikatea Station would be enhanced relative to those which would result if the resource consent was declined (the outcome requested by DOC). This offset is to be achieved through an active management programme involving:

1. Permanent protection utilising an appropriate covenant (e.g., QEII National Trust Open Space Covenant) on the property title of 799 ha of podocarp-broadleaved forest, regenerating podocarp forest, broadleaved forest, kanuka forest and manuka shrubland, together with some areas of pasture.
2. Removal of domestic grazing pressure from all protected areas through the establishment of new fencing and the repair of existing fencing as appropriate.
3. Active management of feral grazing animals including goats and possums.
4. Monitoring of biodiversity values.
5. Natural regeneration of some areas currently under pasture, once they have been retired from grazing - primarily riparian areas.

Implications of this decision

Land management decision making is often strongly polarised with DOC and various environmental NGOs arguing strongly for no clearance of indigenous vegetation irrespective of their current and likely future condition, even when a biodiversity offset proposal has been put forward. This argument is used even when the existing land use is resulting in ongoing loss of biodiversity values through undergrazing and existing use rights mean that such management will continue if consents are not granted. In one recent case on Banks Peninsula, a proposal for the establishment of plantation forestry involved the clearance of some areas of regenerating shrubland and kanuka forest but as offset some 213 ha (23 %) of the property (comprising mature and regenerating forest remnants and riparian zones) would be permanently protected from forestry and grazing and allowed to regenerate with animal pest control

part of the ongoing management. However, this proposal was not deemed acceptable to some of the parties involved in the case and the forest proposal has not proceeded.

The problem for biodiversity conservation of such an intransigent approach is that the biodiversity outcome from denying consent and hence preventing clearance is that biodiversity values continue to decline as a result of undergrazing. This proposition was accepted by the Court in the Waikatea case and is also the outcome that is happening in the Banks Peninsula example. This is essentially a lose-lose outcome for both biodiversity and economic values, although advocates of this approach such as DOC will claim no loss of indigenous vegetation cover, at least in the short term.

In contrast the biodiversity offset approach allows individuals and companies wanting to enhance economic opportunities, for example through the establishment of plantation forests, to also enhance biodiversity outcomes by significantly improving biodiversity conservation values through removal of current degrading influences such as grazing. Furthermore, such an approach is also likely to be very positive in terms of carbon sequestration as degraded indigenous woody vegetation rapidly sequesters carbon as it regenerates. The Environment Court's decision on the Waikatea Station case provides an important precedent that other parties should utilise to argue for sustainable land management outcomes in establishing new plantation forests. However, in using biodiversity offsets, interested parties should thoroughly research the past, present and likely future ecological patterns of the property in question and the management approaches that will be utilised to achieve the offset (e.g., covenanting and fencing) as a basis for providing a consenting authority or the Environment Court with a substantive proposal to consider.

Acknowledgements

My thanks to Hawke's Bay Regional Council for inviting me to be involved in the Waikatea Station case especially Garth Eyles, Hamish Cochrane for GIS support, and to Garth, Hamish, Hugh Stevenson, Philip Milne and Matthew Conway of Simpson Grierson (the lawyers who represented HBRC) for comments on this article.

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