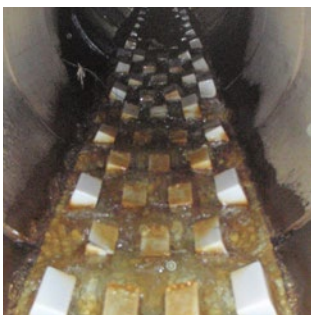
Managing adverse effects on indigenous biodiversity in the Wellington Region

A guide to implementing the effects management hierarchy in the Natural Resources Plan



Greater Wellington
Te Pane Matua Taiao

Above: Planning site layout to avoid waterbodies is the most effective way of managing effects on biodiversity, with many concurrent benefits (e.g., amenity, open space, recreational opportunities). Source: Clarke *et al.* 2018.

Cover main photo: Example of waterway naturalisation within an urban development. © Shelley McMurtrie/EOS Ecology.

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Glossary

Aquatic ecosystem health	The degree to which an aquatic ecosystem is able to sustain its ecological structure, processes, functions, and resilience within its range of natural variability.[a]
Biodiversity compensation	Means a measurable positive environmental outcome resulting from actions that are designed to compensate for residual adverse biodiversity effects. The principles to be applied when proposing and considering biodiversity compensation are provided in Schedule G3 (biodiversity compensation).[a]
Biodiversity mitigation	The abatement (lessening or repair) of the adverse effects of an activity, and at the same location as, that activity, designed and implemented in accordance with principles set out in Schedule G1.[a]
Biodiversity offset	A measurable positive environmental outcome resulting from actions designed to redress the residual adverse effects on biodiversity arising from activities after appropriate avoidance, minimisation, and remediation measures have been applied. The goal of a biodiversity offset is to achieve no net loss, and preferably a net gain, of indigenous biodiversity values. The principles to be applied when proposing and considering biodiversity offsets are provided in Schedule G2 (biodiversity offsetting).[a]
Cultural impact assessment	A report or written advice prepared to consider the potential impacts of an activity on the cultural values within an area. It must be prepared by a suitably qualified person mandated by mana whenua. A cultural impact assessment may include, but is not limited to, Māori history, Treaty claims and settlements, presence of significant sites, social effects and recommendations for avoiding, remedying and mitigating adverse effects. Note: Greater Wellington maintains a list of the contact details for iwi authorities.[a]
Cultural use values	Any values of importance to local people, whether Māori, Pākehā or others.
Ecological health	Used in the same way that 'aquatic ecosystem health' is used in the NRP. The degree to which an ecosystem is able to sustain its ecological structure, processes, functions, and resilience within its range of natural variability.

Effect	Includes a) any positive or adverse effect; and b) any temporary or permanent effect; and c) any past, present or future effect; and d) any cumulative effect which arises over time or in combination with other effects regardless of the scale, intensity duration, or frequency of the effect, and also includes e) any potential effect of high probability; and f) any potential effect of low probability which has a high potential impact.[b] 'Effect' and 'impact' are used interchangeably in this document.
Ephemeral flow path	A river that: A) has a bed that is predominantly vegetated, and B) only conveys or temporarily retains water during or immediately following heavy rainfall events, and C) does not convey or retain water at other times. Note: An ephemeral flow path is not a surface water body.[a]
Functional need (in the CMA)	When an activity is dependent on having its location in the coastal marine area.[a]
Functional need (in beds of lakes and rivers and inland natural wetlands)	The need for a proposal or activity to traverse, locate or operate in a particular environment because the activity can only occur in that environment.[a]
Kaupapa Māori	The principles, values or philosophies of Māori culture.
Mahinga kai	The customary gathering of food and natural materials, the food and resources themselves and the places where those resources are gathered.[a]
Mana whenua	Māori with ancestral claims to a particular area of land and resources. Literally, translated as "authority over the land". Whanau, hapu and iwi are mana whenua of a particular rōhe, while Māori are tangata whenua of Aotearoa (New Zealand).[a]
Minimise	Reduce to the smallest amount reasonably practicable. Minimised, minimising and minimisation have the corresponding meaning.[a]
More than minor adverse effects	Adverse effects that are noticeable that may cause an adverse impact but could potentially be mitigated or remedied.[c] Note that under the NRP remedy actions are a subset of biodiversity mitigation.
Natural functioning	The capacity of a community or ecosystem to maintain the ecological processes (e.g., decomposition, nutrient cycling) that are typical of that natural community or ecosystem type.

Natural range

The geographical area over which a species has naturally lived in recent times (since about 5000 years before the present), excluding any changes to that range that result from human activities.[d]

Natural wetland

Is a permanently or intermittently wet area, shallow water and land water margin that supports a natural ecosystem of plants and animals that are adapted to wet conditions, including in the beds of lakes and rivers, the coastal marine area (*e.g.,* saltmarsh), and groundwater-fed wetlands (e.g., springs). Natural wetlands do not include:

A) damp gully heads, or wetted pasture with patches of rushes, or

B) areas of wetland habitat that have established in or around bodies of water specifically designed, installed and maintained for any of the following purposes:

   i) water storage ponds for
      a) public water supply, or
      b) hydroelectric power generation, or
      c) firefighting, or
      d) irrigation, or
      e) stock watering, or

   ii) water treatment ponds for
      a) wastewater, or
      b) stormwater, or
      c) nutrient attenuation, or
      d) sediment control, or
      e) animal effluent, or

   iii) beautification, landscaping, amenity, or

   iv) drainage.

See also significant natural wetland and outstanding natural wetland.

'Wetland' has the same meaning as in the RMA.

Note that, because of the rarity of wetlands in the Wellington Region, all natural wetlands will meet the representativeness and rarity criteria listed in Policy 23 of the Regional Policy Statement 2013 and therefore meet the definition of significant natural wetland.[a]

Operational requirement

When an activity needs to be carried out in a particular location or way (including because of technical, logistical or safety reasons) in order to be able to function effectively and efficiently.[a]

Point of impact

The area in which any adverse effect would be incurred. This is the only area in which any biodiversity mitigation measures can be implemented. (As determined by the High Court in the Escarpment Mine decision, see Royal Forest and Bird Protection Society of New Zealand v Buller District Council and West Coast Regional Council and others [2013 NZHC 1346, Fogarty J.]).

Reclamation

Reclamation in the coastal marine area of the bed of a river, lake, or wetland means the creation of dry land.

In the coastal marine area, reclamation does not include coastal or river mouth protection structures such as seawall or revetments, boat ramps, and any structure above water where that structure is supported by piles, or any infilling where the purpose of that infilling is to provide beach nourishment.[a]

Recognised taxonomic units

Any taxa listed in the New Zealand Organisms Register. (See www.nzor.org.nz)

Regionally significant infrastructure

Regionally significant infrastructure includes:

- pipelines for the distribution or transmission of natural or manufactured gas or petroleum, including any associated fittings, appurtenances, fixtures or equipment,
- strategic facilities to the telecommunication network, as defined in Section 5 of the Telecommunications Act 2001,
- strategic facilities to the radio communications network, as defined in Section 2(1) of the Radio Communications Act 1989,
- the National grid,
- facilities for the generation and/or transmission of electricity where it is supplied to the National grid and/or the local distribution network,
- facilities for the electricity distribution network, where it is 11kV and above. This excludes private connections to the local distribution network,
- the local authority water supply network (including intake structures) and water treatment plants,
- the local authority wastewater and stormwater networks and systems, including treatment plants and storage and discharge facilities,
- the Strategic Transport Network (including ancillary structures required to operate, maintain, upgrade and develop that network),

	• the following local arterial routes: Masterton-Castlepoint Road, Blairlogie-Langdale/Homewood/Riversdale Road and Cape Palliser Road in Wairarapa, Tītahi Bay Road and Grays Road in Porirua, and Kāpiti Road, Marine Parade, Mazengarb Road, Te Moana Rpad, Akatarawa Road, Matatua Road, Rimu Road, Epiha Street, Paekakariki Hill Road, The Parade [Paekakariki] and The Esplanade [Raumati South in Kāpiti], • Wellington City bus terminal and Wellington Railway terminus, • Wellington International Airport, • Masterton Hood Aerodrome, • Kapiti Coast Airport, • Commerical Port Area and infrastructure associated with Port Related activities in the Lambton Harbour Area with Wellington Harbour (Port Nicholson) and adjacent land used in association with the movement of cargo and passengers and including bulk fuel supply infrastructure, and storage tanks for bulk liquids, and associated wharflines, • Silverstream, Spicer and Southern landfills.[a]
Remedy	Rehabilitate, restore, or reinstate to rectify adverse effects that have occurred.
Residual adverse effects	The negative effects on the environment remaining from an activity after avoidance, remediation, and mitigation measures have been taken.a Note that under the NRP remedy actions are a subset of biodiversity mitigation.
Same location	Means the point of impact.
Significant adverse effects	An effect that is noticeable and will have a serious adverse impact on the environment but could potentially be mitigated or remedied.[c] Note that under the NRP remedy actions are a subset of biodiversity mitigation.
Site	The area affected by the wider proposal (including the point of impact) and generally owned by the applicant.
Specified infrastructure	Means any of the following: a) infrastructure that delivers a service operated by a lifeline utility (as defined in the Civil Defence Emergency Management Act 2002) b) regionally significant infrastructure identified as such in a regional policy statement or regional plan c) any public flood control, flood protection, or drainage works carried out: i) by or on behalf of a local authority, including works carried out for the purposes set out in Section 133 of the Soil Conservation and Rivers Control Act 1941, or ii) for the purpose of drainage by drainage districts under the Land Drainage Act 1908.[e]

Tikanga	Customary practices and values, typically followed in order to protect mauri and/or mana.[a]
Upgrade	Use and development to bring existing structures or facilities up to current standards or to improve the functional characteristics of structures or facilities, provided that the effects of the activity are the same or similar in character, intensity and scale as the existing structure and activity. In relation to renewable electricity generation activities, includes increasing the generation or transmission capacity, efficiency or security of regionally significant infrastructure and replacing support structures within the footprint of authorised activities.[a]
Wetland restoration management plan	A plan for managing the restoration of a wetland under Rule R106, where the restoration involves activities managed by Rules R107, R108, R109, R110 and R111. Wetland restoration management plans must be prepared in accordance with Schedule F3a (Wetland restoration management plans).[a]

Glossary References

[a] Natural Resources Plan for the Wellington Region 2022

[b] Resource Management Act 1991

[c] Roper-Lindsay *et al.* 2018

[d] Oxford Reference (www.oxfordreference.com)

[e] National Policy Statement for Freshwater Management 2020

Fencing and pest control tied to specific objectives can help to offset for the residual adverse effects of a development.

A northern grass skink in the process of being translocated to a new habitat to offset for the residual adverse effects of a nearby housing development.
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Introduction

In 2020 the Government gazetted a replacement National Policy Statement for Freshwater Management (NPS-FM) and new National Environmental Standards for Freshwater (NES-FW) which aim to stop further degradation of our freshwater resources and restore our rivers, lakes and wetlands to a healthy state within a generation.

Alongside the New Zealand Coastal Policy Statement 2010 (NZCPS), the NPS-FM and NES-FW provide strong national direction to protect and restore aquatic ecosystem health and indigenous biodiversity in freshwater and marine habitats.

The Natural Resources Plan for the Wellington Region 2022 (the NRP) sets out the objectives, policies, rules and other methods to be applied by people and organisations that use the region's natural resources to achieve the purpose of the Resource Management Act 1991 and the outcomes sought through national policy directions.

Two key objectives of the NRP are objectives O25 and O35. Objective O25 aims to safeguard biodiversity, aquatic ecosystem health and mahinga kai in freshwater bodies and the coastal marine area. Objective O35 aims to protect ecosystems and habitats with significant indigenous biodiversity values from the adverse effects of use and development and, where appropriate, restore them to a healthy functioning state.

Scope of Guidance

This document provides guidance on the assessment required under each step of the NRP effects management hierarchy, and as part of the preparation of any Assessment of Environmental Effects for resource consent applications which have effects on biodiversity, aquatic ecosystem health and mahinga kai. Its aim is to provide clarification for resource consent applicants – and the planners, ecologists and others acting on their behalf – on:

A) the differences between biodiversity mitigation, biodiversity offsetting and biodiversity compensation, and

B) how to apply the principles in NRP Schedules G1 (Biodiversity mitigation), G2 (Biodiversity offsetting), and G3 (Biodiversity compensation), and

C) the evaluation required to demonstrate that the principles for each step have been applied.

This guidance applies to all environments covered by the NRP effects management policies, being the coastal environment, wetlands, and the beds of lakes and rivers in the Wellington Region.

The guidance is most relevant to assisting the maintenance and protection of indigenous biodiversity directed by the NRP. It does not provide detail regarding the protection of wider aquatic ecosystem health, or cultural and spiritual values. Nevertheless, the approach and principles described in this guidance do apply to values other than indigenous biodiversity. In the case of values of significance to mana whenua, a resource consent applicant should consult with the relevant iwi.

The Effects Management Hierarchy

The effects management hierarchy (also known as the 'mitigation hierarchy') is an internationally accepted approach to managing biodiversity and is considered to be one of the most important procedural instruments for protecting biodiversity from the impacts of development.

The order of the hierarchy is specific and critical. Avoidance is the first step. Minimising the impacts of development comes second, followed by remediation of any further harm. Offsetting is to be considered only if the prior three steps have been applied and are not sufficient to prevent biodiversity losses. In some circumstances compensation measures may also be offered, but this is the least preferred option for managing biodiversity as it does not provide benefits that are equivalent to the losses.

This hierarchy requires those proposing an activity to:

First, and preferentially, **avoid** damaging biodiversity;

Then **minimise** any damage;

> When adverse impacts cannot be avoided, they can often be minimised by adjusting the project design or operation.
> *Minimise the impact on the habitat – reduce the footprint of the activity or the amount of disturbance to the habitat.*

Then **remedy** (restore) any biodiversity damaged by the project at the point of impact;

> Some habitats or ecosystems, for example, can be restored after they have been impacted.
> *Restore the damaged/disturbed habitat to the way it was.*

Under the NRP, these three steps for managing adverse effects on biodiversity are collectively termed '**biodiversity mitigation**'.[1]

If residual adverse effects on biodiversity remain after these steps have been taken, consent applicants may offer to redress these through **biodiversity offsets**.

1 Consent applicants commonly refer to a 'mitigation package' to encompass all actions taken to redress adverse effects at the point of impact (including avoid, minimise and remedy) and to offer positive effects, generally elsewhere (including offsets and compensation) (Roper-Lindsay *et al.*, 2018, p. 92). It is important to note that this is a shorthand only and should not be confused with the technical distinctions between biodiversity mitigation, biodiversity offsetting and biodiversity compensation defined in the glossary and used throughout this guidance.

For some projects all efforts to avoid or minimise biodiversity losses, or to restore biodiversity at the point of impact (i.e., the area in which the relevant residual adverse effects would be incurred), will not be enough to suitably redress adverse effects. These residual adverse effects can sometimes be redressed through biodiversity offsets. Biodiversity offsetting is a process that seeks to counter-balance any unavoidable impacts of development activities on biodiversity by enhancing the state of biodiversity elsewhere. The main distinction between mitigation (including avoid, minimise and remedy steps) and offsetting is that mitigation must occur at the point of impact while offsetting provides redress for biodiversity losses by creating ('like-for-like' or 'like-for-better') biodiversity gains elsewhere, guided by the biodiversity offsetting principles.

In some circumstances, and if provided for by the relevant policies, **biodiversity compensation** measures may be necessary to redress effects that cannot be offset (e.g., because an offset exchange is technically impossible). Compensation measures differ from offsets in that they cannot produce benefits that are equivalent to the losses and therefore provide the worst outcomes for the affected biodiversity, albeit potentially positive effects for other biodiversity.

The steps in the effects management hierarchy are shown in Figures 1 and 2.

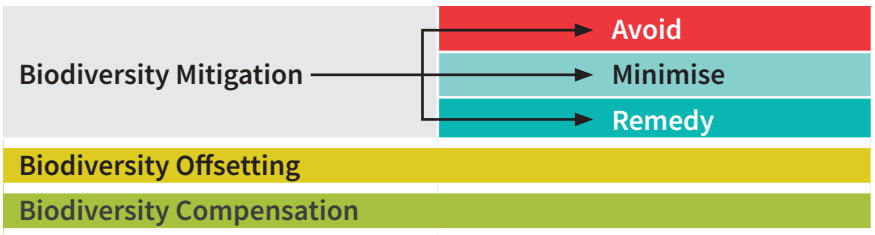

Figure 1:
The NRP effects management hierarchy.

Biodiversity 'Net Gain'

The goal of both biodiversity offsetting and biodiversity compensation is to produce positive effects to counteract the residual adverse effects of a development. These positive effects will ideally result in an overall benefit to indigenous biodiversity.

For biodiversity offsetting, the goal is to achieve at least no net loss but preferably a 'net gain'. For biodiversity compensation, a net gain outcome is not possible as the values exchanged are not equivalent (e.g., not 'like-for-like' or 'like-for-better'). Nevertheless, the goal is still to provide positive effects that outweigh the adverse effects incurred.

For some projects, positive effects provided by biodiversity offsets will ensure a net gain in the values exchanged. Projects incorporating the use of biodiversity compensation may also result in a positive outcome but these cannot claim a project-wide 'net gain' as this concept is specific to the use of offsetting.

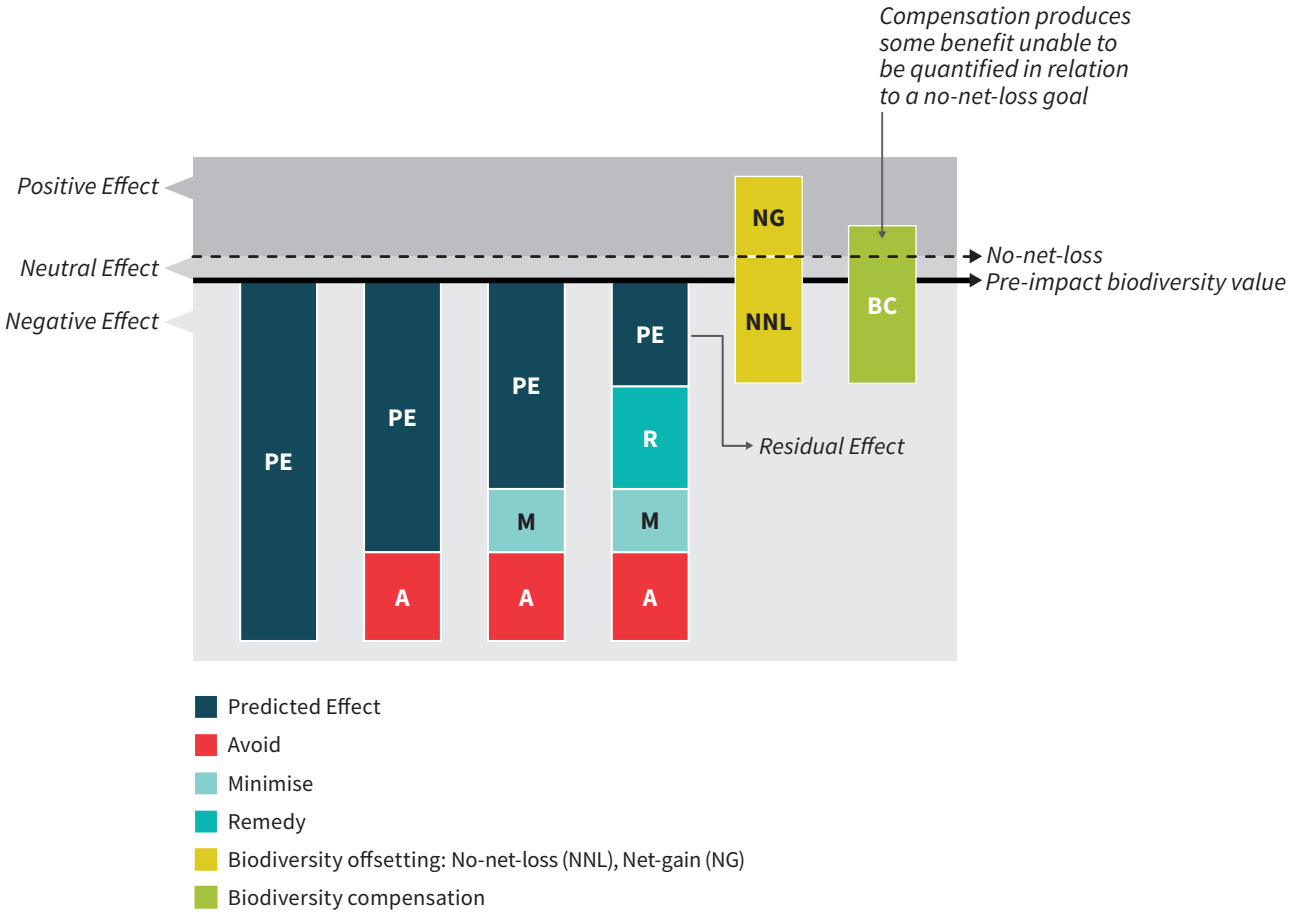

Figure 2: Conceptual illustration of the effects management hierarchy (adapted from the Business and Biodiversity Offsets Programme, 2013[2]) progressing from avoidance (least risk and most certainty) to biodiversity compensation (greatest risk and least certainty) and showing the difference between a neutral 'no-net-loss' outcome and positive 'net gain' outcome. The no-net-loss line is above the pre-impact biodiversity value as more gains than losses are required to achieve no-net-loss when accounting for uncertainty and time-lags.

Application of the effects management hierarchy is both provided for and constrained by the policy settings in the NZCPS, the NPS-FM and, in the Wellington Region, the NRP. The policy settings vary according to the type of environment within which an activity is proposed (i.e., the coastal environment, a river, lake or wetland) and the significance of the resource (e.g., whether it has outstanding or significant values).

For example, in areas where the values are particularly high (e.g., areas with outstanding values, or that support rare and irreplaceable species) the policy setting requires that adverse effects are to be avoided, rather than allowing other actions to be taken to make up for any loss or damage. This recognises the important distinction between avoiding harm (the critical step to truly safeguard

2 The Business and Biodiversity Offsets Programme was a collaboration of more than 80 organisations and individuals, including companies, financial institutions, government agencies and civil society organisations. The Programme worked to test and develop best practice on biodiversity offsets and conservation banking worldwide.

Case study: Coastal reclamation to facilitate a public walkway

A local council proposes to construct a short section of coastal walkway that may adversely impact an area of rocky reef, thus requiring consent from Greater Wellington Regional Council. An application might include some or all of the following measures to redress the adverse effects of their development:

Avoid An options assessment demonstrates that other walkway alignments were considered that did not impact on the area of rocky reef. Most of the reef was able to be avoided, including the area of highest ecological value.

Minimise Biosecurity measures are put in place to minimise the risk of introducing pest species to the area during construction of the walkway. The duration and timing of works are planned to further reduce construction-related impacts. The orientation and nature of lighting for the walkway is tailored to reduce post-construction impacts.

Remedy Some impacts are temporary and able to be partially remedied at the point of impact through the placement of new rocky habitat structures.

Offset Residual adverse effects are able to be partially offset through the use of artificial habitat structures which enhance the habitat value of some hard surfaces when installed elsewhere in the local marine environment. Funding a marine weed control initiative enhances the ecological value of the remainder of the rocky reef ecosystem.

Compensate Restoration work on an adjacent estuary provides benefits for other marine environments not directly impacted by the development. Additional funding is provided to support research on future mechanisms for offsetting effects on rocky reefs ecosystems.

Further examples of mitigation, offsetting and compensation measures are identified in Table 1, with more detailed case studies provided in Appendices 2–3.

'Vertipools' designed to provide habitat for marine biota such as invertebrates and algae. These may be used to partially offset for the residual adverse effects of developments in the marine environment.
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and protect an ecosystem, habitat or species) and offsetting and compensating which, strictly speaking, neither protect nor safeguard but rather offer an exchange or trading of values.

Policies that stop at avoidance recognise that there is an overwhelming risk of sub-optimal outcomes for the environment associated with the use of the effects management hierarchy in those situations. This has been highlighted by a number of recent reviews[3] cautioning that many offset schemes have failed to achieve good environmental outcomes. The reasons for this failure include a lack of technical options to replace an ecosystem or habitat, lack of research to critically assess the efficacy of offsetting practices, unequal trade-offs, inadequate consideration of restoration risk and uncertainty, and administrative failures such as a lack of compliance monitoring and enforcement.

National policy direction on the effects management hierarchy

The following NZCPS and NPS-FM policies are relevant to application of the NRP effects management hierarchy (their direction is reflected in NRP policies P32, P39, P39A and P45, which are set out in full in Appendix 1):

In the coastal environment, NZCPS Policy 11 requires that:

1) For ecosystems and habitats that meet the criteria of Policy 11(a) of the NZCPS, adverse effects are to be avoided, and no effects management hierarchy can be applied.
2) For ecosystems and habitats that meet the criteria of Policy 11(b) of the NZCPS, significant adverse effects are to be avoided, and other adverse effects can be avoided, minimised, and/or remedied.

For natural inland wetlands, NPS-FM 2020 clause 3.22 enables:

Loss of extent and values of natural inland wetlands only for the purpose of the construction or upgrade of specified infrastructure which will provide significant national or regional benefits, and which has a functional need in that location, and the effects of the activity are managed through applying the effects management hierarchy (including offsetting and compensation).

For rivers, NPS-FM 2020 clause 3.24 only provides for:

The loss of river extent and values if the council is satisfied that a) there is a functional need for the activity in that location; and b) the effects of the activity are managed by applying the effects management hierarchy (including offsetting and compensation).

3 For examples see Brown *et al.*, 2013; Brown, 2017; Brower *et al.* 2018; Walker *et al.*, 2021.

The Importance of a Principled Approach

As noted above, application of the effects management hierarchy has tended to be inconsistent, often resulting in poor outcomes for biodiversity, both in New Zealand and elsewhere. Requiring and enforcing an accepted standard of principled analysis to be undertaken for each step of the effects management hierarchy is critical to eliminate inadequate and ad-hoc decision making in the Wellington region and to ensure that any mitigation, offset or compensation measures offered will achieve an appropriate outcome for biodiversity.

The NRP sets out the principles to be applied when proposing and considering mitigation, offsetting and compensation in relation to biodiversity in:

- Schedule G1: *Principles to be applied when proposing and considering mitigation in relation to biodiversity,*
- Schedule G2: *Principles to be applied when proposing and considering a biodiversity offset, and*
- Schedule G3: *Principles to be applied when proposing and considering biodiversity compensation.*

Principles not listed in the schedules

The NRP schedules do not include some principles used elsewhere, at least for the consideration of biodiversity offsetting (e.g., New Zealand Government 2014, Maseyk ***et al.*** 2018). Principles not included are: stakeholder participation; science and traditional knowledge; transparency; and equity. This is because the fulfilment of these principles is already directed by RMA part 2 (Purpose and principles) and part 6 (Resource consents), and as a standard requirement under Schedule 4 (Information required in application for resource consent).

- **Stakeholder participation** is provided for by part 6 of *Schedule* 4 which details the information required for assessments of environmental effects. This includes f) 'identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted'. Part 7 of *Schedule* 4 details the matters that must be addressed by an assessment of environmental effects. This includes addressing a) 'any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects'.
- **Science and traditional knowledge** is also provided for by part 7 of Schedule 4. This includes addressing d) 'any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations'. The RMA does not exclude the use of any form of knowledge in determining what an effect is or how it might be redressed.
- **Transparency** is provided for by part 6 of the Act which details the process that must be undertaken in assessing the adequacy of resource consents, including when they must be publically notified.
- In addition to Schedule 4, the principle of ***equity*** is also enshrined in part 2 of the Act.

Other Effects Management Guidance

This guidance has been heavily informed by three related guidance documents. These are:

- The New Zealand Government's ***Guidance on good practice biodiversity offsetting in New Zealand*** (2014),
- Local Government New Zealand's ***Biodiversity offsetting under the Resource Management Act*** (2018), and
- The Environment Institute of Australia and New Zealand's ***Ecological impact assessment: EIANZ guidelines for use in New Zealand – terrestrial and freshwater ecosystems*** (2018).

We recommend that these documents be read alongside this guidance.

This document will be periodically updated to ensure that it aligns with any future legislative changes, developments in case law, additional guidance, changes in practice, or any other relevant developments. The latest version will be housed on our website.

Riparian planting to offset for residual adverse effects on a nearby watercourse.
© Max Curnow/Greater Wellington

Assessing the Level of Environmental Effects

An Assessment of Environmental Effects (AEE)[4]must accompany a resource consent application to identify the potential effects of the activity on the environment[5] and to detail how these effects will be managed in accordance with the objectives and policies of the NRP. It is essential that the AEE detail what species, habitats and/or ecosystems are to be impacted[6],how valued species use the affected area (*e.g.,* breeding, feeding, roosting), and how the proposed activities will affect their habitats over the duration of the impact.[7]

Gathering and presenting such information may require input from a range of parties (e.g., ecologists, planners, mana whenua) who should be engaged by the applicant as early in the process as possible. We also highly recommend engaging in pre-application discussions with Greater Wellington. These discussions help to ensure that applicants are made aware of any potential shortcomings in their AEE and how they can work to address these. Each consent application is eligible for up to four hours free pre-application advice from council.[8]

The AEE should be presented in a manner that enables ready comparison between the anticipated impacts and the actions proposed to redress them. Templates to help resource consent applicants to organise and present this information are found on our website.

Sediment retention pond installed to minimise the adverse effects of soil disturbance at a development site.
© Max Curnow/Greater Wellington

4 For guidance on preparing an AEE see Ministry for the Environment, 1999.

5 See Section 4.1 of Roper-Lindsay *et al.*, 2018 for guidance on determining the baseline or 'existing environment'. To be clear, it is this existing environment upon which effects are to be assessed, not one that might have existed in the past.

6 This must consider the relevant threshold of effect (e.g., significant, more than minor). Applicants should refer to Roper-Lindsay *et al.*, 2018, chapter 6, for guidance on determining the relevant scale or scales of impact (e.g., feature-level, catchment, harbour) which must be identified and made clear in the application. To avoid down-playing the level of adverse effects, effects should generally be assessed at several spatial and temporal scales (De Luca, 2019).

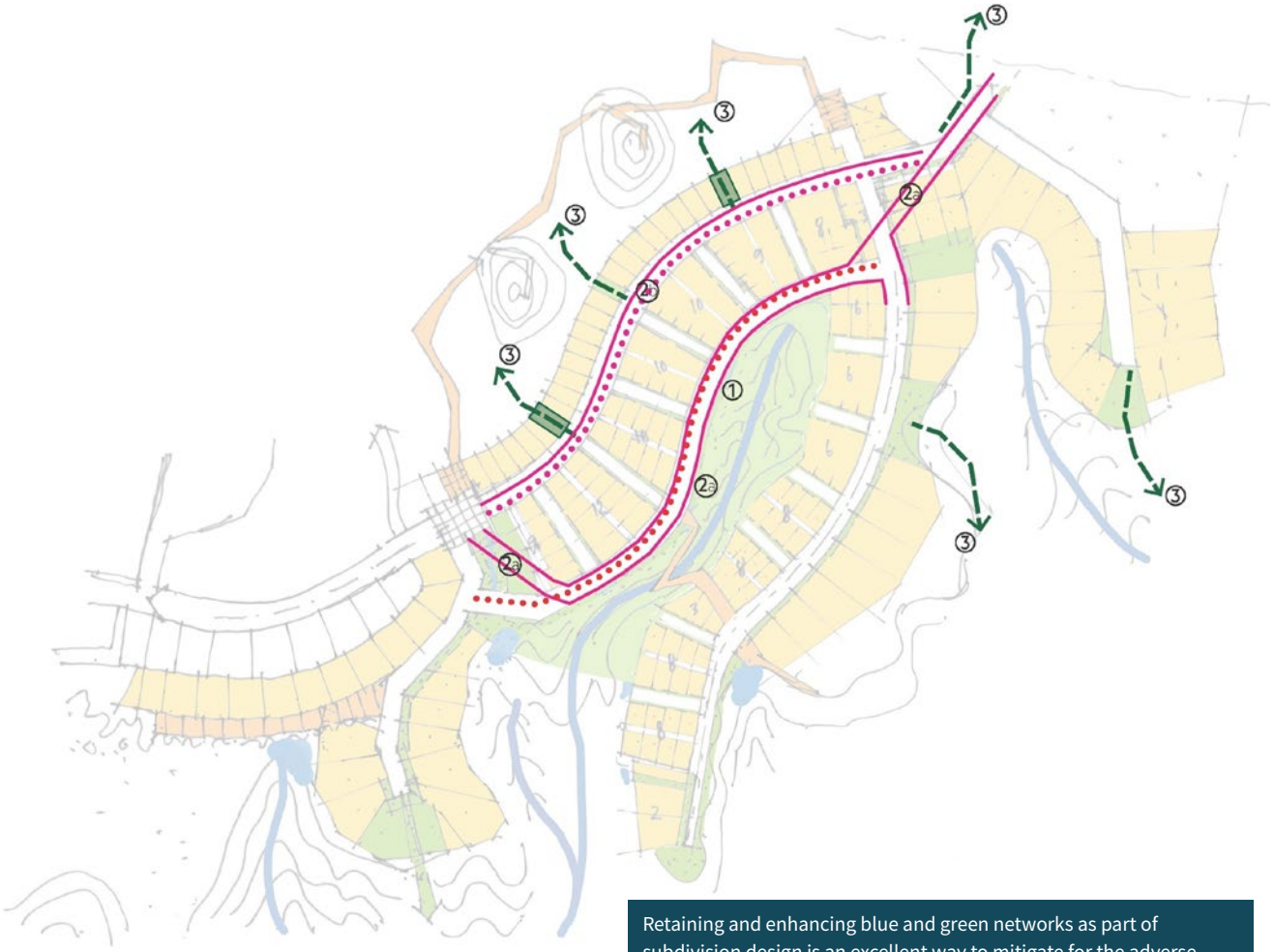
7 This component of the AEE is often detailed in an appended Ecological Impact Assessment (EcIA). For guidance on preparing an EcIA see Roper-Lindsay *et al.* 2018.

8 For details see https://archive.gw.govt.nz/need-a-resource-consent

Mitigation, Offsetting and Compensation

The management of adverse effects often necessitates the use of a mixture of the mitigation, offsetting and compensation measures identified below.

Note that the examples provided are not definitive. They provide a high-level overview of the types of actions that may be appropriate. The Department of Conservation has compiled some helpful case studies of recent restoration projects, most of which are relevant to managing adverse effects under the NRP.[9]



Retaining and enhancing blue and green networks as part of subdivision design is an excellent way to mitigate for the adverse effects of development on local biodiversity and ecosystem services.
Source: Clarke *et al.* 2018

9 See Department of Conservation, 2019. These case studies apply to freshwater environments only.

Table 1: Effects management actions and examples of each that may be considered as part of a consenting decision.

Biodiversity **Mitigation**

Action		Explanation	Example
The abatement (lessening or repair) of the adverse effects of an activity, undertaken in direct response to, and at the same location as, that activity. The principles used to guide the development of biodiversity mitigation proposals are located in Schedule G1.	**AVOID** Avoid the site or avoid causing an adverse effect.	These actions avoid the impact altogether by modifying design or operations or seeking an alternative location.	Avoidance of significant and/or sensitive biodiversity features. This may include: • complete avoidance of features such as wetlands, streams or estuaries, • partial avoidance of features (e.g., retain the most sensitive or important part of a feature).
			Avoidance of development during key periods, such as through: • avoidance of breeding or migration seasons for indigenous fish species, • avoidance of breeding seasons for indigenous birds or bats (e.g., where a proposal affects a tree that provides nesting or roosting habitat for these taxa).
	MINIMISE Reduce the effect to the smallest amount reasonably practicable.	These actions reduce the impact by limiting the degree or magnitude of adverse effects.	Minimisation of adverse development effects, such as through: • the use of erosion and sediment control measures, • biosecurity procedures to prevent pest incursions related to the development, • controls on entry to the impacted site by vehicles and people • translocation of fish and large aquatic invertebrates (e.g., kōura, kākahi) from a directly-impacted stream reach to a reach of the same stream that is not directly affected by the activity, • trimming (rather than felling) of riparian trees to allow temporary access to a stream reach, • placing limits on the extent, duration and frequency of works.
			Minimisation of post-development (or ongoing activity) effects, such as through: • the installation of fish passage devices, • the use of noise or light barriers, • restrictions on ownership of companion animals.
	REMEDY Rehabilitate, restore, or reinstate to rectify adverse effects that have occurred.	These actions rectify impacts through repair, reinstatement or restoration of the affected site at the point of impact.	Remediation of affected habitat or species, such as through: • reseeding or replanting, • facilitated return (translocation) of affected plants and animals to the site.

Biodiversity **Offsetting**

Action	Explanation	Example
Positive effects provided beyond the point of impact, directly related to the adverse effect. The principles used to guide the development of biodiversity offsetting proposals are located in Schedule G2.	These actions provide redress for residual impacts by replacing or enhancing substitute resources or environments beyond the point of impact. The adverse effect at the point of impact remains. An offset proposal is considered to be a positive effect and not mitigation of an adverse effect.[10] Because the decision to notify a resource consent application (s95) only considers adverse effects, offsetting proposals cannot be taken into account in the notification decision making. Some offset actions may themselves require resource consents (e.g., earthworks for wetland creation)	Offsetting of affected habitat through an **averted loss offset**. An averted loss offset prevents future loss of biodiversity that would have occurred if not for the management action. Examples of averted loss offset actions may include: • the retirement of resource consents or other permits that allow vegetation clearance and were likely to be initiated, • providing legal protection for a habitat or ecosystem that was at credible risk of loss through development actions elsewhere.
		Offsetting of affected habitat or species through an improvement offset. An improvement offset restores (a **restoration offset**) or enhances (an **enhancement offset**) the same affected species or type of habitat or ecosystem elsewhere. Enhancement offsets do not on their own replace the extent of habitat lost. They are therefore inappropriate when used in isolation. However, when used in conjunction with restoration offsets or averted loss offsets they may be important components in an overall offset package.[11] In some circumstances it may be appropriate to consider restoration or enhancement offset actions as forms of **trading-up offsets**.[12]This is where the offset action involves an out-of-kind exchange of one type of biodiversity for a different type of biodiversity which is of a greater conservation value. For example, where the loss of habitat of a non-threatened species is exchanged for the gain in habitat for a threatened species. Examples of restoration offset actions may include: • planting of bare or weedy riparian margins to create a native river corridor, • 'daylighting' of a stream to restore its natural functioning, • diverting a stream around an impact with associated measures to create appropriate habitat in the new channel, • creation of new wetland habitat, including through re-creation of historically-drained wetland habitat, • removal of a barrier to fish passage[13] such that an upstream reach becomes accessible fish habitat, • translocation of native animals or plants to an area where they might once have been present, but have become locally extinct, • creating features within a freshwater or marine environment to provide habitat for additional native aquatic animals (i.e., for species adversely affected by the development or activity at the point of impact). Examples of enhancement offset actions may include: • targeted pest or weed control tied to specific objectives, • fencing to prevent access of stock or pest animals to wetlands or waterways,[14] • planting to enhance the diversity of an existing native river margin, • removal of an artificial pond or bed lining from a natural waterway, • re-engineering habitat within a freshwater or coastal environment to enhance habitat for existing native aquatic animals.

10 When considering a consent application (RMA s104), a consent authority must have regard to any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will, or may, result from allowing the activity. Under s104D, a consent authority may grant a resource consent for a non-complying activity. However, the consent authority must be satisfied that either *a)* the adverse effects of the activity on the environment will be minor (this therefore does not include consideration of offsetting proposals), or *b)* the application is for an activity that will not be contrary to the objectives and policies of the relevant plans (offsetting proposals can be considered because the NRP provides for it under Policies P32, P39, P39A and P45).

11 See Maseyk *et al.* 2018, pp. 37–40. We acknowledge that the distinction between enhancement and restoration offsets is not always clear. Some offset actions may classify as both. The objective is to ensure the recreation of both habitat area and condition in the manner directed by NPS-FM goals 6 and 7 (i.e., avoiding the loss of both 'extent' and 'values').

12 See Maseyk *et al.* 2018 for guidance on the use of trading-up offsets.

13 There are limited opportunities to improve native fish passage as a biodiversity offset measure in the Wellington region. This is because fish passage through artificial structures is generally a legal requirement (Freshwater Fisheries Regulations (1983) Part 6) and therefore cannot be considered 'additional' (Schedule G2, Principle 3). Applicants are advised to contact DOC in the first instance to check the legality of any artificial fish passage barrier they are considering removing or modifying as an offset measure. Further guidance can be found in Franklin *et al.* 2018.

14 Except where fencing of a wetland or waterway is already a legal requirement.

Biodiversity **Compensation**

Action	Explanation	Example
Positive effects for biodiversity generally provided beyond the point of impact, but not directly related to the adverse effect. The principles used to guide the development of biodiversity compensation proposals are located in Schedule G3.	These actions compensate for the impact by providing substitute resources for implementation elsewhere or for a different purpose (i.e., 'like-for-unlike'). Biodiversity compensation is a new addition to the effects management policies P32 and P39A in the NRP Appeals version, with compensation provided for by RMA ss104, 168 and 171 and aquatic compensation explicitly provided for in the NPS-FM. Actions that do not benefit biodiversity (e.g., installation of a park bench, a new walkway) cannot be considered as a form of biodiversity compensation. Council also cannot accept financial contributions as we have no mechanism (e.g., a biobanking scheme) for administering such funds. Some compensation actions may themselves require resource consents (e.g., earthworks for wetland creation).	Compensation for adversely affected habitat or species, such as through: • planting of terrestrial vegetation to compensate for the loss of riparian vegetation, • control of weeds or pests to support native species not affected by the development or activity, • creation of a wetland to compensate for the infilling of a stream, • restoration of an estuary to compensate for effects to a rocky reef ecosystem, • funding research or educational initiatives that will result in benefits to an affected species or ecosystem type.

Targeted weed control tied to specific objectives can help to offset for the residual adverse effects of a development.
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Schedule G1:
Biodiversity Mitigation Principles

Table 2 provides direction on appropriate implementation of the NRP principles for biodiversity mitigation. Each of the principles must be applied in a manner aligning with 'good implementation'. The best way to present this information in a consent application is in tabular format. Applicants are strongly encouraged to discuss any points of confusion or difficulty with the consenting authority prior to submitting their application.

Table 2: Examples of good and poor implementation of the NRP principles for biodiversity mitigation.

Schedule G1: **Principle 1** – Adherence to the effects management hierarchy		
Wording	**GOOD implementation**	**POOR implementation**
The proposed biodiversity mitigation will be assessed in accordance with the effects management hierarchy set out in Policies P32, P39, and P39A. Any proposal for biodiversity mitigation will document the appropriate measures taken to respectively avoid, minimise, or remedy any adverse effects of the activity on biodiversity.	• The proposed biodiversity mitigation is clearly aligned to the effects management hierarchy set out in Policies P32, P39, and P39A. • The application identifies and considers the options for mitigating the adverse effects of the proposal. • Actions proposed by the applicant to avoid, minimise, or remedy adverse effects on biodiversity are presented in that order. • Actions are clearly differentiated in the application, showing the relationship between the specific adverse effect and the action to avoid, minimise or remedy that effect. • The most important step in the hierarchy is avoid, followed by minimise, followed by remedy.[15] The application demonstrates this by putting at least as much effort into detailing and justifying actions taken to avoid adverse effects as it does to detailing and justifying actions to minimise and remedy adverse effects.[16] • Where application of the NRP effects management policies is predicated on an activity having a functional need or operational requirement to traverse, locate or operate in a particular environment (e.g., as in Policy P102), the application must demonstrate both how the activity meets either of these tests and why avoidance of the area is not considered possible. This should show in detail either why the activity could only be sited there, or why it was necessary to locate it there due to other technical, logistical or financial constraints. • Policies P32, P39 and P39A then state the level of adverse effects that mitigation measures must address. Depending on the resource, any residual or all more than minor residual adverse effects may be offset following the principles in Schedule G2.	• The proposal shows no alignment with the effects management hierarchy set out in policies P32, P39 or P39A. • The application does not identify and consider the options considered by the applicant for mitigating the adverse effects of their proposal (instead, skipping straight to those that they resolved to propose). • The proposal does not differentiate between avoid, minimise, or remedy actions, and there is no ordering to the presentation of actions. • The analysis suggests that more effort has been expended identifying options to minimise or remedy effects than to avoid effects in the first instance. • The justification for not avoiding an effect fails to demonstrate a functional need or operational requirement for doing so. • There is no clear relationship between the mitigation proposed and the adverse effects of the activity or development. • The proposal includes irrelevant or unrelated actions that are not directed at mitigating adverse effects. • The proposal has skipped steps in the hierarchy or provides no justification for cursory treatment.

15 This is because avoiding or minimising adverse effects provides greater certainty that biodiversity values will persist than remedying them afterward. It is generally easier and less risky to retain biodiversity features than to recreate them. This hierarchy aligns with the precautionary approach directed by Policy P3.

16 We recommend the approach outlined in Clarke *et al.* 2018 which is particularly relevant to mitigating the effects of housing developments on streams and wetlands.

Schedule G1: **Principle 2** – Additional conservation outcomes

Wording	GOOD implementation	POOR implementation
Any proposal for biodiversity mitigation will demonstrate that the actions to mitigate adverse effects on biodiversity are additional to what would have occurred without the proposed mitigation, including any activities required by any associated resource consent/s.	• Proposed actions are additional to any that are already legally required. • Proposed actions are not already being undertaken or are planned as part of existing management programmes.	• Proposed actions are already legally required (i.e., should be undertaken regardless). • Proposed actions are already being undertaken or are planned as part of existing management programmes.

Schedule G1: **Principle 3** – Landscape context

Wording	GOOD implementation	POOR implementation
Any proposals for biodiversity mitigation will: A) demonstrate that the proposed actions to mitigate adverse effects will be undertaken at the same location as the activity that causes them, and	Proposed actions are situated at the same location as the activity that caused them. The 'same location' is defined as the point of impact (e.g., where the disturbance or deposition occurs).	Proposed actions are situated at a location that is unaffected by the activity they seek to mitigate (i.e., the actions do not address effects at the point of impact).
B) complement and contribute to the protection of significant indigenous vegetation, or the habitats of threatened fauna at the local, regional or national level, and	Proposed actions complement and contribute to the protection of significant[17] vegetation[18] or animals at the local, regional[19] or national level.	Proposed actions undermine the conservation of species or ecosystems (e.g., by enhancing habitat for regionally threatened species but at the expense of habitat for nationally threatened species).
C) take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and	• Proposed actions are based on an assessment of the full range of values affected by the activity, including social and cultural values.[20] • The assessment of values takes account of all available information, both for the site impacted and the species and ecosystems present there. • Proposals for mitigation take an ecosystem-scale approach (i.e., they consider effects on the wider ecosystem, not just the effects on the portion of the ecosystem directly affected).[21]	• Proposed actions do not take account of available information on the range of values impacted by the activity. • Proposed actions do not align with an ecosystem-scale approach (i.e., they do not consider the effects of the activity on the wider ecosystem).
D) take into consideration other likely future developments, such as competing land use pressures, within the landscape.	• Proposed actions avoid areas known to be planned for further development or future impactful activities. • Proposed actions anticipate the adverse effects of planned future activities on adjacent areas (e.g., developments that may contribute to an increase in weed or pest incursions into neighbouring properties).	• Proposed actions disregard known future activities or developments that may further adversely impact the site. • Proposed actions disregard the potential adverse impacts of known future activities or developments in adjacent areas.

17 For a list of resources relevant to identifying significant species and ecosystems in the Wellington region refer to Greater Wellington, 2016 (Appendix 2).

18 All Myrtaceae taxa in New Zealand are currently classified as 'threatened' due to the threat posed by myrtle rust. We take the approach of the proposed National Policy Statement for Indigenous Biodiversity which directs that if a Significant Natural Area is identified as such only because of the presence of mānuka or kānuka that is considered threatened only because of the threat posed by myrtle rust, it should not be managed as if it is a Significant Natural Area. Assessment against the other significance criteria listed in RPS Policy 23 must also determine whether it is a Significant Natural Area. If it qualifies as significant for any other reason, then it should be managed as a Significant Natural Area.

19 For regional native species threat classification lists see Crisp, 2020a (lizards), Crisp, 2020b (vascular plants), and Crisp, 2020c (birds).

20 This assessment should include consideration of any cumulative effects of the proposal, noting the direction of NRP Policy P42.

21 See RMA Schedule 4 (Information required in application for resource consent). Part 6 of the Schedule details the information required for AEEs. This includes f) 'identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted'. Part 7(1) details the matters that must be addressed by an AEE. This includes addressing a) 'any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects'.

Schedule G1: **Principle 4** – Long-term outcomes		
Wording	**GOOD implementation**	**POOR implementation**
Any proposals for biodiversity mitigation should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the activity's impacts, and preferably in perpetuity. The proposed biodiversity mitigation will: A) demonstrate that management arrangements, legal arrangements (*e.g.,* covenants) and financial arrangements (*e.g.,* bonds) are in place for as long as the adverse effects of the activity, and preferably in perpetuity, and	• Proposed actions are accompanied by any management, legal or financial safeguards needed to ensure delivery. • Arrangements provide confidence that the mitigation of adverse effects will endure at least as long as the effects themselves, and preferably in perpetuity.	• No arrangements are provided to ensure that adverse effects will be mitigated for the life of the effects anticipated. • Arrangements do not mitigate for all anticipated adverse effects caused throughout the duration of the activity (unless residual adverse effects are redressed through an appropriate biodiversity offset, see Table 3 below. The relevant policy setting would need to provide for this).
B) be able to be implemented and enforced in line with any resource consent conditions associated with the activity. These conditions should include: i) specific, measurable and time-bound targets, and ii) mechanisms for adaptive management using the results of periodic milestones to determine whether the biodiversity mitigation is on track and how to rectify if necessary, and	• Draft consent conditions[22] provided with the application include specific, measurable and time-bound[23] targets for compliance. • Draft consent conditions specify mechanisms for adaptive management in the event of non-compliance.	• Draft consent conditions do not include specific, measurable and time-bound targets for compliance. • Draft consent conditions do not specify mechanisms for adaptive management in the event of non-compliance.
C) establish roles and responsibilities for managing, governing, monitoring and enforcing the biodiversity mitigation, and	The consent application clearly establishes roles and responsibilities[24] for managing, governing and monitoring the mitigation.	The consent application does not clearly establish roles and responsibilities for managing, governing and monitoring the mitigation
D) undertake methods by which analysis will identify when milestones of the biodiversity mitigation are not achieved, and the causes of non-achievement, and how to revise the management plan to avoid similar occurrences.	Draft consent conditions provided with the application clearly establish criteria for achieving milestones (and for identifying non-compliance) and identify a process for rectifying matters when milestones are not achieved.	• Draft consent conditions do not establish criteria for achieving milestones (and for identifying non-compliance). • A process for rectifying matters when milestones are not achieved is not identified.

22 For guidance on proposing draft consent conditions see Maseyk *et al.* 2018 (p. 49).

23 Any proposed mitigation action must redress the targeted adverse effects within one human generation (approximately 25 years) at a maximum (see Walker *et al.* 2021, p. 2).

24 The responsibility for all these activities is ultimately that of the consent holder, although they may choose to delegate tasks to third parties (e.g., consultant ecologists, consent planners).

Wetland protection and restoration can help to offset for the residual adverse effects of nearby developments.
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Schedule G2:
Biodiversity Offsetting Principles

Table 3 provides direction on appropriate implementation of the NRP principles for biodiversity offsetting. Each of the principles must be applied in a manner aligning with 'good implementation'. The best way to present this information in a consent application is in tabular format. Applicants are strongly encouraged to discuss any points of confusion or difficulty with the consenting authority prior to submitting their application. Offset actions undertaken in advance of consent lodgement may be considered.[25]

Table 3: Examples of good and poor implementation of the NRP principles for biodiversity offsetting.

Schedule G2: **Principle 1** – Adherence to the effects management hierarchy		
Wording	**GOOD implementation**	**POOR implementation**
The proposed biodiversity offset will be assessed in accordance with the effects management hierarchy set out in Policies P32, P39 and P39A. Any proposal for a biodiversity offset will demonstrate how it addresses the residual adverse effects of the activity.	• The proposal is clearly aligned to the effects management hierarchy set out in Policies P32, P39 or P39A. • Offset actions are directed only at redressing residual adverse effects (i.e., those remaining after avoid, minimise and remedy actions have been exhausted) • Actions are clearly differentiated in the application, showing the relationship between the specific residual adverse effect and the action to offset it. • For assessments under Policy P39 or P39A(b), offsets will address any residual adverse effects (having first mitigated adverse effects (Policy P39) or non-significant adverse effects (Policy P39A(b)) to the extent possible following Schedule G1). • For assessments dealing with adverse effects on biodiversity, aquatic ecosystem health, and mahinga kai under Policy P32, offsets will address more than minor residual adverse effects (having first mitigated adverse effects to the extent possible following Schedule G1). • The application identifies and considers the options for offsetting the residual adverse effects of the proposal, including consideration of both restoration offset and enhancement offset options.	• The proposal shows no alignment with the effects management hierarchy set out in Policies P32, P39 or P39A. • There is no clear relationship between the offset actions proposed and the residual adverse effects of the activity or development. • The proposal includes irrelevant or unrelated actions that are not directed at offsetting residual adverse effects. • The application does not identify and consider the options for offsetting the residual adverse effects of the proposal (including through both restoration and enhancement offsets).

25 Any offset actions undertaken in advance of the consenting decision must be discussed with Greater Wellington before undertaking the actions, and well before consent lodgement. These may be considered as part of a consenting decision. See Maseyk *et al.* 2018 (pp. 15, 57–59) for a discussion on how offsets in advance may be considered by consenting authorities.

Schedule G2: **Principle 2** – Limits to what can be offset

Wording	GOOD implementation	POOR implementation
Consideration of biodiversity offsetting is inappropriate where: A) there is no appropriate site, knowledge, proven methods, expertise or mechanism available to design and implement an adequate biodiversity offset, or	• The proposed offset actions are to be undertaken at an appropriate site (e.g., residual adverse effects on a permanent stream reach are proposed to be offset on another permanent stream reach, not within a wetland or other ecosystem type).[26] • The proposed offset actions are accompanied by appropriate knowledge, mechanisms and methods. That is, they have been demonstrated to work elsewhere in the same or similar circumstances. The application references these. • The proposed offset actions are commensurate with the value of the biodiversity affected (i.e., the higher the conservation value the higher the probability of success needs to be). • The proposed offset actions are endorsed by someone with a technical background in biodiversity offsetting for effects on the ecosystem or ecosystems affected.	• The proposed actions are to be undertaken at a site that does not align with that affected (e.g., the proposed offset provides positive effects on a terrestrial ecosystem when the affected ecosystem is an aquatic one). • No evidence is provided to show whether the proposed offset has worked elsewhere in the same or similar circumstances, or efficacy is implied without reference to specific cases or studies. • The proposed offset actions are not commensurate with the value of the biodiversity affected (e.g., an offset action with a low probability of success is offered for a feature of high conservation value). • No endorsement for the proposal is provided by someone with a technical background in biodiversity offsetting for effects on the ecosystem or ecosystems affected.
B) when an activity is anticipated to cause residual adverse effects on an area after an offset has been implemented where: i) the ecosystem or species are "threatened" (as defined by the New Zealand Threat Classification System categories: Nationally Critical (NC), Nationally Endangered (NE), and Nationally Vulnerable (NV), or ii) the ecosystem is naturally uncommon.	The proposal does not result in any residual adverse effects on any threatened species or any naturally uncommon ecosystem.[27]	The proposal results in residual adverse effects on a threatened species or a naturally uncommon ecosystem.

Schedule G2: **Principle 3** – Additional conservation outcomes

Wording	GOOD implementation	POOR implementation
Any proposal for a biodiversity offset will demonstrate that the actions taken to achieve positive effects on biodiversity are additional to what would have occurred without the proposed biodiversity offset, including any activities required by any associated resource consent/s.	• Proposed actions are additional to any that are already legally required. • Proposed actions are not already being undertaken or are planned as part of existing management programmes.	• Proposed actions are already legally required (i.e., should be undertaken regardless). • Proposed actions are already being undertaken or are planned as part of existing management programmes.

26 For general guidance on limits to offsetting refer to the New Zealand Government's additional offsetting resources (see www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/limits-to-offsetting-in-new-zealand.pdf, www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/risks-to-offsetting.pdf, www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/assessing-limits-supporting-data.pdf). For additional guidance specific to the Wellington region see www.gw.govt.nz/assets/Documents/2022/03/Limits-to-offsetting.pdf

27 A description of the 72 naturally uncommon ecosystems in New Zealand is provided in Wiser *et al.*, 2013.

Schedule G2: **Principle 4** – Landscape context

Wording	GOOD implementation	POOR implementation
Any proposals for biodiversity offsetting will: A) demonstrate that positive effects are achieved preferentially, first at the site, then the relevant catchment, then within the ecological district, except where there is an appropriate ecological rationale for doing otherwise, and	• Proposed offset actions are planned for within the same site as the activity.[28]Where this is not possible, the offset actions are proposed for within the affected catchment. Where this is not possible, the offset actions are proposed for within the relevant ecological district.[29] • Occasionally, there may be situations where it is more appropriate to offset at the catchment-level rather than at the site-level, despite the availability of feasible offset areas at the site (e.g., where ongoing effects at the site make the long-term viability of a constructed wetland risky or untenable). Here, the applicant provides a clear rationale for why offsetting at the catchment-level is more ecologically appropriate than at the site. • Rarely, there may be situations where it is more appropriate to offset elsewhere in the ecological district (or beyond) rather than at the catchment-level (e.g., where no opportunities to undertake a restoration or averted loss offset to redress the residual adverse effects on a stream can be found within the catchment). Here, the applicant provides a clear rationale for why offsetting there is more ecologically appropriate than at the catchment-level.	• Proposed offset actions are planned for at the point of impact itself (and therefore cannot be considered offset actions).[30] • Proposed offset actions are planned at the catchment-level or the ecological district-level (or beyond), rather than at the site, without a clear ecological rationale for why.
B) complement and contribute to the protection of significant indigenous vegetation, or the habitats of threatened fauna at the local, regional or national level, and	Proposed actions complement and contribute to the protection of significant[31] vegetation[32] or animals at the local, regional[33] or national level.	The proposal results in residual adverse effects on a threatened species or a naturally uncommon ecosystem.
C) take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and	• Proposed actions are based on an assessment of the full range of values affected by the activity, including social and cultural values.[34] • The assessment of values takes account of all available information, both for the site impacted and the species and ecosystems present there. • Proposed actions take an ecosystem-scale approach (i.e., they consider effects on the wider ecosystem, not just the effects on the portion of the ecosystem directly affected). This assessment should include consideration of any cumulative effects of the proposal, noting the direction of NRP Policy P42.	• Proposed actions do not take account of available information on the range of values impacted by the activity. • Proposed actions do not align with an ecosystem-scale approach (i.e., they do not consider the effects of the activity on the wider ecosystem).
D) take into consideration other likely future developments, such as competing land use pressures, within the landscape.	• Proposed actions avoid areas known to be planned for further development or future impactful activities. • Proposed actions anticipate the adverse effects of planned future activities on adjacent areas (e.g., developments that may contribute to an increase in weed or pest incursions into neighbouring properties).	• Proposed actions disregard known future activities or developments that may further adversely impact the site. • Proposed actions disregard the potential adverse impacts of known future activities or developments in adjacent areas.

28 But not at the point of impact itself as actions here would be forms of biodiversity mitigation and assessed against Schedule G1 instead (unless they are proposed as trading-up offsets in which case actions at the point of impact may be considered).

29 For a map of ecological districts in the Wellington Region refer to Greater Wellington, 2016 (Appendix 3).

30 See footnote 28 above.

31 For a list of resources relevant to identifying significant species and ecosystems in the Wellington region refer to Greater Wellington, 2016 (Appendix 2).

32 All Myrtaceae taxa in New Zealand are currently classified as 'threatened' due to the threat posed by myrtle rust. We take the approach of the proposed National Policy Statement for Indigenous Biodiversity which directs that if a Significant Natural Area is identified as such only because of the presence of mānuka or kānuka that is considered threatened only because of the threat posed by myrtle rust, it should not be managed as if it is a Significant Natural Area. Assessment against the other significance criteria listed in RPS Policy 23 must also determine whether it is a Significant Natural Area. If it qualifies as significant for any other reason, then it should be managed as a Significant Natural Area.

33 For regional native species threat classification lists see Crisp, 2020a (lizards), Crisp, 2020b (vascular plants), and Crisp, 2020c (birds).

34 See RMA Schedule 4 (Information required in application for resource consent). Part 6 of the Schedule details the information required for AEEs. This includes f) 'identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted'. Part 7(1) details the matters that must be addressed by an AEE. This includes addressing a) 'any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects'. For advice on consulting with iwi in our region see www.gw.govt.nz/your-council/mana-whenua-partners/resource-consents

Schedule G2: **Principle 5** – Long-term outcomes

Wording	GOOD implementation	POOR implementation
Any proposals for biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the activity's impacts, and preferably in perpetuity. The proposed biodiversity offset will: A) demonstrate that management arrangements, legal arrangements (e.g., covenants) and financial arrangements (e.g., bonds) are in place that allow the positive effects to endure as long as the residual adverse effects of the activity, and preferably in perpetuity, and	• Proposed actions are accompanied by any management, legal or financial safeguards needed to ensure delivery. • Arrangements provide confidence that the positive effects will endure at least as long as the adverse effects incurred, and preferably in perpetuity.	• No arrangements are provided to ensure that positive effects will be provided to offset for the life of the residual adverse effects anticipated. • Arrangements do not offset for all anticipated residual adverse effects caused throughout the duration of the activity.
B) be able to be implemented and enforced in line with any resource consent conditions associated with the activity. These conditions should include: i) specific, measurable and time-bound targets, and ii) mechanisms for adaptive management using the results of periodic milestones to determine whether the biodiversity offset is on track and how to rectify if necessary, and	• Draft consent conditions[35] include specific, measurable and time-bound[36] targets for compliance. • Draft consent conditions specify mechanisms for adaptive management in the event of non-compliance.	• Draft consent conditions do not include specific, measurable and time-bound targets for compliance. • Draft consent conditions do not specify mechanisms for adaptive management in the event of non-compliance.
C) establish roles and responsibilities for managing, governing, monitoring and enforcing the biodiversity offset, and	The consent application clearly establishes roles and responsibilities[37] for managing, governing and monitoring the offset.	The consent application does not clearly establish roles and responsibilities for managing, governing and monitoring the offset.
D) undertake methods by which analysis will identify when milestones of the biodiversity offset are not achieved, and the causes of non-achievement, and how to revise the offset management plan to avoid similar occurrences.	Draft consent conditions clearly establish criteria for achieving milestones (and for identifying non-compliance) and identify a process for rectifying matters when milestones are not achieved.	• Draft consent conditions do not establish criteria for achieving milestones (and for identifying non-compliance). • A process for rectifying matters when milestones are not achieved is not identified.

35 For guidance on proposing appropriate consent conditions see Maseyk *et al.* 2018 (p. 49).

36 Any proposed offset action must redress the targeted adverse effects within one human generation (approximately 25 years) at a maximum (see Walker *et al.* 2021, p. 2).

37 The responsibility for all these activities is ultimately that of the consent holder, although they may choose to delegate tasks to third parties (e.g., consultant ecologists, consent planners).

Schedule G2: **Principle 6** – No net biodiversity loss

Wording	GOOD implementation	POOR implementation
Any proposals for biodiversity offsets will provide measurable positive effects on biodiversity preferentially, first at the site, then the relevant catchment, then within the ecological district, which can reasonably be expected to result in no net loss and preferably a net gain of biodiversity. No net loss means no reasonably measurable overall reduction in: A) the diversity of indigenous species or recognised taxonomic units; and	• The proposed offset provides measurable positive effects (e.g., daylighting of 220m of piped stream length, 150m² of riparian planting) that will likely result in at least no net loss for biodiversity. • The proposed offset does not result in a measurable reduction in the diversity of indigenous species (or recognised taxonomic units) compared with the diversity at the impact site.	• The proposed offset provides positive effects that are not measurable (e.g., suggesting that an offset will simply replace the extent of wetland lost without providing quantitative specifications), providing no confidence that they will result in at least no net loss for biodiversity. • The proposed offset results in a measurable reduction in the diversity of indigenous species (or taxonomic units) compared with the diversity at the impact site. • The proposed offset does not compare the diversity of indigenous species (or recognised taxonomic units) at the impact site with those anticipated at the offset site.
B) indigenous species' population sizes (taking into account natural fluctuations) and long term viability; and	The proposed offset does not result in a measurable reduction in the population size and long term viability of any affected indigenous species at either a regional or a national level.	• The proposed offset results in a measurable reduction in the population size and long term viability of an affected indigenous species at either a regional or a national level. • The applicant does not assess the proposed offset's effect on the population size and long term viability of all affected indigenous species' at either a regional or a national level.
C) the natural range inhabited by indigenous species; and	The proposed offset does not result in a measurable reduction in the natural range of any indigenous species.	• The proposed offset results in a measurable reduction in the natural range of any indigenous species. • The applicant does not assess the proposed offset's effect on the natural range of all affected indigenous species.
D) the range and ecological health and functioning of assemblages of indigenous species, community types and ecosystems; and	• The proposed offset does not result in a measurable reduction in the existing range of any indigenous species, community type or ecosystem. • The proposed offset does not result in a measurable reduction in the ecological health of any indigenous speciescommunity type or ecosystem. • The proposed offset does not result in a measurable reduction in the natural functioning of any indigenous community type or ecosystem.	• The proposed offset results in a measurable reduction in the existing range of an indigenous species, community type or ecosystem. • The proposed offset results in a measurable reduction in the ecological health of an indigenous species, community type or ecosystem. • The proposed offset results in a measurable reduction in the natural functioning of any indigenous community type or ecosystem. • The applicant does not assess the proposed offset's capacity to redress any residual adverse effects on the existing range, ecological health and natural functioning of all indigenous species, community types and ecosystems affected by the activity.
E) the cultural use values of indigenous habitats or species.	The proposed offset does not result in a measurable reduction in the cultural use values of the affected indigenous habitats or species.	• The proposed offset results in a measurable reduction in the cultural use values of the affected indigenous habitats or species. • The applicant does not consider the effect of the proposed offset on the cultural use values of affected indigenous habitats or species.

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Schedule G2: Principle 6 continued...

Any proposals for biodiversity offset will demonstrate: F) that an explicit calculation of loss and gain has been undertaken as the basis for the biodiversity offset design, and should demonstrate the manner in which no net loss, and preferably net gain of biodiversity, can be achieved by the biodiversity offset, and	• The proposed offset includes a calculation[38] of loss and gain to demonstrate the manner in which a no net loss or net gain outcome is anticipated to be achieved.[39] • The full workings of the offset calculation, including all assumptions and variables, are provided with the consent application. • The offset calculation accounts for all indigenous biodiversity to which residual adverse effects apply.[40] • Data used in the calculation are informed by accepted technical guidance[41] with regards to key variables such as species and ecosystem valuation (e.g., employing national or regional threat classifications). • All proposed actions are incorporated into the offset calculation.	• The proposed offset does not include a calculation of loss and gain to demonstrate the manner in which a no net loss or net gain outcome is anticipated to be achieved. • The full workings of the offset calculation are not provided with the consent application (i.e., parts of the exchange, such as assumptions or variables, are concealed from the decision maker). • The offset calculation fails to account for all indigenous biodiversity to which residual adverse effects apply. • Data used in the calculation are not consistent with generally accepted technical guidance. • One or more offset actions are proposed that are not reflected in the offset calculation (i.e., they appear to have no bearing on the calculation of no net loss).
G) that the biodiversity offset design and implementation should include provisions for addressing sources of uncertainty and risk of failure in delivering the biodiversity offset, and	The proposed offset design includes provisions for addressing sources of uncertainty and risk of failure.[42] These include draft consent conditions – linked to the most likely sources of failure – specifying actions to be taken in the event of non-achievement.[43]	• The proposed offset design does not include provisions for addressing sources of uncertainty and risk of failure. • The applicant does not consider any sources of uncertainty and risk of failure of their proposed offset.
H) that the offset is applied so that the ecological values being achieved through the offset are the same or similar to those being lost, and	The proposed offset design demonstrates that the values lost are at least equivalent to those gained. This includes consideration of the effects of any time lag between impacts and offset actions.	• The proposed offset design fails to adequately demonstrate that the values lost are at least equivalent to those gained. • The applicant does not consider whether the values lost are at least equivalent to those gained.
I) the intention to include and use a biodiversity offset management plan that: i) sets out baseline information on the indigenous biodiversity that is potentially impacted by the proposed activity at both donor and recipient sites, and ii) demonstrates how the requirements set out in this Schedule will be carried out, and iii) identifies the monitoring approach that will be used to demonstrate how the matters set out in this Schedule have been addressed over an appropriate timeframe.	• The applicant provides a draft offset management plan to accompany their proposal.[44] • The draft offset management plan sets out baseline information on the indigenous biodiversity proposed to be affected at both the impact and offset sites. • The draft offset management plan demonstrates how the requirements in this Schedule will be implemented. • Demonstration of the above is displayed in tabular format so that the decision maker can readily compare these principles with the proposed application of them. • The draft offset management plan sets out the monitoring approach that will be used to assess adherence with the principles in this Schedule.	• The applicant does not provide a draft offset management plan to accompany their proposal. • The draft offset management plan does not provide baseline information on the indigenous biodiversity proposed to be affected at both the impact and offset sites. • The draft offset management plan fails to demonstrate how the requirements in this Schedule will be implemented. • The draft offset management plan fails to set out the monitoring approach that will be used to assess adherence with the principles in this Schedule.

38 For guidance on calculating offsets, including through the use of multipliers, refer to Maseyk *et al.* 2018 (chapters 3–4), and the New Zealand Government's additional biodiversity offsetting resources (see www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/currency-and-accounting-systems.pdf, www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/dealing-with-uncertainty.pdf).

39 When calculating terrestrial exchanges, Baber *et al.* 2021 recommend the use of Qualitative Biodiversity Models rather than Biodiversity Offset Accounting Models. We recognise that there may be a place for Qualitative Biodiversity Models (e.g., when calculating like-for-unlike exchanges) but prefer the use of Biodiversity Offset Accounting Models. This is because – as Baber *et al.* point out – efforts to demonstrate that offsets have actually been achieved through Biodiversity Offset Accounting Models remain rare. It is not yet clear whether Qualitative Biodiversity Models will yield any better results, and it is possible that their use may yield even worse outcomes.

40 Noting that this may incorporate the use of surrogates or indicator species.

41 Generally, we recommend alignment with Roper-Lindsay *et al.* 2018.

42 For guidance on dealing with offset uncertainty and risk see www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/dealing-with-uncertainty.pdf

43 High risk proposals should be accompanied by more stringent draft consent conditions and/or accept the imposition of environmental bonds as safeguards in the event of failure.

44 For guidance on offset management plans see the New Zealand Government's additional biodiversity offsetting resource: www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/offset-management-plans.pdf

Schedule G3:
Biodiversity Compensation Principles

Table 4 provides direction on principles to be applied when proposing and considering biodiversity compensation. Each of the principles must be applied in a manner aligning with 'good implementation'. The best way to present this information in a consent application is in tabular format. Applicants are strongly encouraged to discuss any points of confusion or difficulty with the consenting authority prior to submitting their application· Compensation actions undertaken in advance of consent lodgement may be considered.[45]

Table 4: Examples of good and poor implementation of principles for biodiversity compensation.

Schedule G3: **Principle 1** – Adherence to the effects management hierarchy		
Wording	**GOOD implementation**	**POOR implementation**
The proposed biodiversity compensation will be assessed in the context of the effects management hierarchy set out in Policies P32 and P39A. Any proposal for biodiversity compensation will demonstrate how it addresses the residual adverse effects of the activity.	• The proposal is clearly aligned to the effects management hierarchy set out in Policies P32 or P39A. • Compensation actions are directed only at redressing residual adverse effects (those remaining after avoid, minimise, remedy and offset actions have been exhausted). • Actions are clearly differentiated in the application, showing the relationship between the specific residual adverse effect and the action to compensate it. • The application identifies and considers a range of options for compensating the residual adverse effects of the proposal.	• The proposal shows no alignment with the effects management hierarchy set out in Policies P32 or P39A. • There is no clear relationship between the compensation actions proposed and the residual adverse effects of the activity or development. • The proposal includes irrelevant or unrelated actions that are not directed at compensating residual adverse effects. • The application does not identify and consider a range of options for compensating the residual adverse effects of the proposal.
Schedule G3: Principle 2 – Limits to biodiversity compensation		
Wording	**GOOD implementation**	**POOR implementation**
Consideration of biodiversity compensation is inappropriate where an activity is anticipated to cause residual adverse effects on an area after biodiversity compensation has been implemented where: A) the ecosystem or species are "threatened" (as defined by the New Zealand Threat Classification System categories: Nationally Critical (NC), Nationally Endangered (NE), and Nationally Vulnerable (NV), or B) the ecosystem is naturally uncommon.	The proposal does not result in any residual adverse effects on any threatened species or any naturally uncommon ecosystem.[46]	The proposal results in residual adverse effects on a threatened species or a naturally uncommon ecosystem.

45 Any compensation actions undertaken in advance of the consenting decision must be discussed with Greater Wellington before undertaking the actions, and well before consent lodgement. These may be considered as part of a consenting decision. See Maseyk *et al.* 2018 (pp. 15, 57–59) for a discussion on how offsets in advance may be considered by consenting authorities. This discussion is also relevant to the consideration of compensation actions undertaken in advance.

46 A description of the 72 naturally uncommon ecosystems in New Zealand is provided in Wiser *et al.*, 2013.

Schedule G3: **Principle 3** – Additional conservation outcomes

Wording	GOOD implementation	POOR implementation
Any proposal for biodiversity compensation will demonstrate that the actions taken to achieve positive effects on biodiversity are additional to what would have occurred without the proposed biodiversity compensation, including any activities required by any associated resource consent/s.	• Proposed actions are additional to what is already legally required. • Proposed actions are additional to those already being undertaken or are planned as part of existing management programmes.	• Proposed actions are already legally required (i.e., should be undertaken regardless). • Proposed actions are already being undertaken or are planned as part of existing management programmes.

Schedule G3: **Principle 4** – Landscape context

Wording	GOOD implementation	POOR implementation
Any proposals for biodiversity compensation will: A) demonstrate that positive effects are achieved preferentially, first at the site, then the relevant catchment, then within the ecological district, except where there is an appropriate ecological rationale for doing otherwise, and	• Proposed compensation actions are planned for within the same site as the activity. Where this is not possible, the compensation actions are proposed for within the affected catchment. Where this is not possible, the compensation actions are proposed for within the relevant ecological district.[47] • Occasionally, there may be situations where it is more appropriate to compensate at the catchment-level rather than at the site-level, despite the availability of feasible compensation areas at the site (e.g., where ongoing effects at the site make the long-term viability of a constructed wetland risky or untenable). Here, the applicant provides a clear rationale for why compensating at the catchment-level is more ecologically appropriate than at the site. • Rarely, there may be situations where it is more appropriate to compensate elsewhere in the ecological district (or beyond) rather than at the catchment-level. Here, the applicant provides a clear rationale for why compensating there is more ecologically appropriate than at the catchment-level. • While necessarily 'like-for-unlike' exchanges, proposals should generally seek to compensate for effects within the same environments (e.g., adverse effects on the marine environment are compensated for by providing positive effects elsewhere in the marine environment). Where compensation is proposed for a different environment than that affected, a clear ecological rationale is provided.	• Proposed compensation actions are planned for at the catchment-level or ecological district-level (or beyond), rather than at the site, without a clear ecological rationale. • Compensation is proposed to occur in an environment that is not affected by the activity (e.g., a positive effect provided in the marine environment to compensate for an adverse effect incurred in a terrestrial environment) without a clear ecological rationale for why.
B) complement and contribute to the protection of significant indigenous vegetation, or the habitats of threatened fauna at the local, regional or national level, and	Proposed actions complement and contribute to the protection of significant[48] vegetation[49] or animals at the local, regional[50] or national level.	Proposed actions undermine the conservation of species or ecosystems (e.g., by enhancing habitat for regionally threatened species but at the expense of habitat for nationally threatened species).

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47 For a map of ecological districts in the Wellington Region refer to Greater Wellington, 2016 (Appendix 3).

48 For a list of resources relevant to identifying significant species and ecosystems in the Wellington region refer to Greater Wellington, 2016 (Appendix 2).

49 All Myrtaceae taxa in New Zealand are currently classified as 'threatened' due to the threat posed by myrtle rust. We take the approach of the proposed National Policy Statement for Indigenous Biodiversity which directs that if a Significant Natural Area is identified as such only because of the presence of mānuka or kānuka that is considered threatened only because of the threat posed by myrtle rust, it should not be managed as if it is a Significant Natural Area. Assessment against the other significance criteria listed in RPS Policy 23 must also determine whether it is a Significant Natural Area. If it qualifies as significant for any other reason, then it should be managed as a Significant Natural Area.

50 For regional native species threat classification lists see Crisp, 2020a (lizards), Crisp, 2020b (vascular plants), and Crisp, 2020c (birds).

Schedule G3: Principle 4 continued...

C) take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and	• Proposed actions are based on an assessment of the full range of values affected by the activity, including social and cultural values.[51] • The assessment of values takes account of all available information both for the site impacted and the species and ecosystems present there. • Proposed actions take an ecosystem-scale approach (i.e., they consider effects on the wider ecosystem, not just the effects on the portion of the ecosystem directly affected).[52]	• Proposed actions do not take account of available information on the range of values impacted by the activity. • Proposed actions do not align with an ecosystem-scale approach (i.e., they do not consider the effects of the activity on the wider ecosystem).
D) take into consideration other likely future developments, such as competing land use pressures, within the landscape.	• Proposed actions avoid areas known to be planned for further development or future impactful activities. • Proposed actions anticipate the adverse effects of planned future activities on adjacent areas (e.g., developments that may contribute to an increase in weed or pest incursions into neighbouring properties).	• Proposed actions disregard known future activities or developments that may further adversely impact the site. • Proposed actions disregard the potential adverse impacts of known future activities or developments in adjacent areas.

Installation of fish passage devices can help to minimise or offset for adverse effects on freshwater ecosystems.

51 See RMA Schedule 4 (Information required in application for resource consent). Part 6 of the Schedule details the information required for AEEs. This includes f) 'identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted'. Part 7(1) details the matters that must be addressed by an AEE. This includes addressing a) 'any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects'. For advice on consulting with iwi in our region see www.gw.govt.nz/your-council/mana-whenua-partners/resource-consents

52 This assessment should include consideration of any cumulative effects of the proposal, noting the direction of NRP Policy P42.

Schedule G3: **Principle 5** – Long-term outcomes

Wording	GOOD implementation	POOR implementation
Any proposals for biodiversity compensation should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the activity's impacts, and preferably in perpetuity. The proposed biodiversity compensation will: A) demonstrate that management arrangements, legal arrangements (e.g., covenants) and financial arrangements (e.g., bonds) are in place that allow the positive effects to endure as long as the residual adverse effects of the activity, and preferably in perpetuity, and	• Proposed actions are accompanied by any management, legal or financial safeguards needed to ensure delivery. • Arrangements provide confidence that the positive effects will endure at least as long as the adverse effects incurred, and preferably in perpetuity.	• No arrangements are provided to ensure that positive effects will be provided to compensate for the life of the residual adverse effects anticipated. • Arrangements do not compensate for all anticipated residual adverse effects caused throughout the duration of the activity.
B) be able to be implemented and enforced in line with any resource consent conditions associated with the activity. These conditions should include: i) specific, measurable and time-bound targets, and ii) mechanisms for adaptive management using the results of periodic milestones to determine whether the biodiversity compensation is on track and how to rectify if necessary, and	• Draft consent conditions[53] include specific, measurable and time-bound[54] targets for compliance. • Draft consent conditions specify mechanisms for adaptive management in the event of non-compliance.	• Draft consent conditions do not include specific, measurable and time-bound targets for compliance. • Draft consent conditions do not specify mechanisms for adaptive management in the event of non-compliance.
C) establish roles and responsibilities for managing, governing, monitoring and enforcing the biodiversity compensation, and	The consent application clearly establishes roles and responsibilities[55] for managing, governing and monitoring the compensation measures.	The consent application does not clearly establish roles and responsibilities for managing, governing and monitoring the compensation measures.
D) undertake methods by which analysis will identify when milestones of the biodiversity compensation are not achieved, and the causes of non-achievement, and how to revise the compensation management plan to avoid similar occurrences.	• The application includes a draft compensation management plan.[56] • The draft compensation management plan includes draft consent conditions. These conditions clearly establish criteria for achieving milestones (and for identifying non-compliance) and identify a process for rectifying matters when milestones are not achieved.	• The application does not include a draft compensation management plan. • Draft consent conditions do not establish criteria for achieving milestones (and for identifying non-compliance). • A process for rectifying matters when milestones are not achieved is not identified.

53 For guidance on proposing appropriate consent conditions see Maseyk *et al.* 2018 (p. 49).

54 Any proposed compensation action must redress the targeted adverse effects within one human generation (approximately 25 years) at a maximum (see Walker *et al.* 2021, p. 2).

55 The responsibility for all these activities is ultimately that of the consent holder, although they may choose to delegate tasks to third parties (e.g., consultant ecologists, consent planners).

56 For guidance on management plans see the New Zealand Government's additional biodiversity offsetting resource: www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/offset-management-plans.pdf

Schedule G3: **Principle 6** — Scale of biodiversity compensation		
Wording	**GOOD implementation**	**POOR implementation**
The values to be lost through the activity to which the biodiversity compensation applies must be addressed by effects for indigenous biodiversity that outweigh the adverse effects on indigenous biodiversity. Any proposals for biodiversity compensation will demonstrate: A) that an explicit calculation of loss and gain has been undertaken as the basis for the biodiversity compensation design, and	• The positive effects of the proposed compensation outweigh the adverse effects on indigenous biodiversity. That is, the positive effects are greater than would be expected under a no net loss offsetting scenario (e.g., compensation for the loss of stream habitat through the creation of wetland habitat that is greater in area and/or conservation value than would be expected following a stream offset ecological compensation ratio). • The proposed compensation includes a calculation[57] of loss and gain to demonstrate the manner in which the positive effects outweigh the adverse effects of the proposal.[58] • The full workings of the compensation calculation, including all assumptions and variables, are provided with the consent application. • The compensation calculation accounts for all indigenous biodiversity to which residual adverse effects apply.[59] • Data used in the calculation are informed by accepted technical guidance[60] with regards to key variables such as species and ecosystem valuation (e.g., employing national or regional threat classifications). • All proposed actions are incorporated into the compensation calculation.	• The proposed compensation offers positive effects that are less than or similar to what would be expected under a no net loss offsetting scenario (e.g., compensation for the loss of stream habitat through the creation of wetland habitat that is less than or equal to the area and/or conservation value that would be expected following a stream offset ecological compensation ratio). • The proposed compensation does not include a calculation of loss and gain to demonstrate the manner in which the positive effects outweigh the adverse effects of the proposal. • The full workings of the compensation calculation are not provided with the consent application (i.e., parts of the exchange, such as assumptions or variables, are concealed from the decision maker). • The compensation calculation fails to account for all indigenous biodiversity to which residual adverse effects apply. • Data used in the calculation are not consistent with generally accepted technical guidance. • One or more compensation actions are proposed that are not reflected in the compensation calculation (i.e., they appear to have no bearing on the calculation of positive effects).
B) that the biodiversity compensation design and implementation includes provisions for addressing sources of uncertainty and risk of failure in delivering the biodiversity compensation, and	The proposed compensation design includes provisions for addressing sources of uncertainty and risk of failure.[61] These include draft consent conditions – linked to the most likely sources of failure – specifying actions to be taken in the event of non-achievement.[62]	• The proposed compensation design does not include provisions for addressing sources of uncertainty and risk of failure. • The applicant does not consider any sources of uncertainty and risk of failure of their proposed compensation.
C) that appropriate expertise and proven methods are available to design and implement an adequate biodiversity compensation.	• The proposed compensation actions are endorsed by someone with a technical background in biodiversity compensation for effects on the ecosystem or ecosystems affected. • The proposed compensation actions are accompanied by a description of appropriate methods. That is, they have been demonstrated to work elsewhere in the same or similar circumstances. The application references these.	• No endorsement for the proposal is provided by someone with a technical background in biodiversity compensation for effects on the ecosystem or ecosystems affected. • No evidence is provided to show whether the proposed compensation has worked elsewhere in the same or similar circumstances, or efficacy is implied without reference to specific cases or studies.

57 For guidance on calculating compensation, including through the use of multipliers, refer to Maseyk *et al.* 2018 (chapters 3–4), and the New Zealand Government's additional biodiversity offsetting resources (see www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/currency-and-accounting-systems.pdf, www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/dealing-with-uncertainty.pdf).

58 When calculating terrestrial exchanges, Baber *et al.* 2021 recommend the use of Qualitative Biodiversity Models rather than Biodiversity Offset Accounting Models. We recognise that there may be a place for Qualitative Biodiversity Models (e.g., when calculating like-for-unlike exchanges) but prefer the use of Biodiversity Offset Accounting Models. This is because – as Baber *et al.* point out – efforts to demonstrate that offsets have actually been achieved through Biodiversity Offset Accounting Models remain rare. It is not yet clear whether Qualitative Biodiversity Models will yield any better results, and it is possible that their use may yield even worse outcomes.

59 Noting that this may incorporate the use of surrogates or indicator species.

60 Generally, we recommend alignment with Roper-Lindsay *et al.* 2018.

61 For guidance on dealing with uncertainty and risk see www.doc.govt.nz/globalassets/documents/our-work/biodiversity-offsets/dealing-with-uncertainty.pdf

62 High risk proposals should be accompanied by more stringent draft consent conditions and/or accept the imposition of environmental bonds as safeguards in the event of failure.

Planting of roadside swales in native vegetation can help to remedy or offset for adverse effects.

References

Baber, M., Christensen, M., Quinn, J., Markham, J., Kessels, G., Ussher, G., Signal Ross, R. 2021. The use of modelling for terrestrial biodiversity offsets and compensation: a suggested way forward. *Resource Management Journal*: 28–33, https://rmla.org.nz/wp-content/uploads/2021/04/RMJ-April-2021_Baber.pdf

Brower, A., Heijs, L., Kimani, R., Ross, J., Doscher, C. 2018. Compliance with biodiversity compensation on New Zealand's public conservation lands. *New Zealand Journal of Ecology* 42: 1–7, www.jstor.org/stable/26538091

Brown, M.A. 2017. *Last line of defence: compliance monitoring and enforcement of New Zealand's environmental law*. Environmental Defence Society, Auckland, www.eds.org.nz/our-work/publications/books/last-line-of-defence/

Brown, M.A., Clarkson, B.D., Barton, B.J., Joshi, C. 2013. Ecological compensation: an evaluation of regulatory compliance in New Zealand. *Impact Assessment and Project Appraisal* 31: 34–44, www.tandfonline.com/doi/pdf/10.1080/14615517.2012.762168

Crisp, P. 2020a. *Conservation status of indigenous lizard species in the Wellington region*. Greater Wellington, Publication No. WRC/ESCI-G-20/2, Wellington, https://www.gw.govt.nz/document/1112/conservation-status-of-indigenous-lizard-species-in-the-wellington-region

Crisp, P. 2020b. *Conservation status of indigenous vascular plant species in the Wellington region*. Greater Wellington, Publication No.GW/ESCI-G-20/20, Wellington, https://www.gw.govt.nz/document/1132/conservation-status-of-indigenous-vascular-plant-species-in-the-wellington-region

Crisp, P. 2020c. *Conservation status of native bird species in the Wellington region*. Greater Wellington, Publication No. GW/ESCI-G-20/75, Wellington, https://archive.gw.govt.nz/assets/Environment-Management/E-Sci/Conservation-status-of-bird-species-in-the-Wellington-region-Dec.pdf

Clarke, C., Burns, A., Thompson, N. 2018. *Stream retention through subdivision design alternatives*. Morphum Environmental Ltd, McIndoe Urban and Wraight + Associates, Wellington, http://pnrp.gw.govt.nz/assets/Uploads/HS5-ROR-Beds-of-Lakes-and-Rivers-Appendix-E-Stream-Retention-Report-13-July-2018.pdf

Department of Conservation. 2019. *Native freshwater fish habitat restoration*. Department of Conservation, Wellington, www.doc.govt.nz/nature/habitats/freshwater/freshwater-habitat-restoration

De Luca, S. 2019. Issues for EcIA in the marine environment in New Zealand. *NZAIA Impact Connector #7 – Ecological Impact Assessment*, www.nzaia.org.nz/uploads/1/2/3/3/12339018/impact_connector_7_-_ecological_impact_assessment.pdf

Franklin, P., Gee, E., Baker, C., Bowie, S. 2018. *New Zealand Fish Passage Guidelines*. NIWA, Hamilton, https://niwa.co.nz/static/web/freshwater-and-estuaries/NZ-FishPassageGuidelines-upto4m-NIWA-DOC-NZFPAG.pdf

Greater Wellington. 2013. *Regional Policy Statement for the Wellington Region*. Greater Wellington, Wellington, https://www.gw.govt.nz/document/16921/regional-policy-statement-for-the-wellington-region

Greater Wellington. 2016. *Identifying and protecting significant indigenous biodiversity in the Wellington Region: A guide to interpreting criteria in the Regional Policy Statement.* Greater Wellington, Wellington, https://www.gw.govt.nz/document/977/identifying-and-protecting-significant-indigenous-biodiversity-in-the-wellington-region

Greater Wellington. 2022. *Natural Resources Plan for the Wellington Region*. Greater Wellington, Wellington, http://pnrp.gw.govt.nz/home/pnrp-appeals-version-2019

Maseyk, F., Ussher, G., Kessels, G., Christensen, M., Brown, M. 2018. *Biodiversity offsetting under the Resource Management Act: A guidance document*. Local Government New Zealand, Wellington, www.lgnz.co.nz/assets/Uploads/7215efb76d/Biodiversity-offsetting-under-the-resource-management-act-full-document-....pdf

Ministry for the Environment. 1999. *A Guide to Preparing a Basic Assessment of Environmental Effects*. Ministry of the Environment, Wellington, https://environment.govt.nz/assets/Publications/Files/aee-guide-aug06.pdf

New Zealand Government. 2014. *Guidance on good practice biodiversity offsetting in New Zealand*. New Zealand Government, Wellington, www.doc.govt.nz/Documents/our-work/biodiversity-offsets/the-guidance.pdf

Quality Planning. 2013. *Consent steps: resource consent conditions*. Ministry for the Environment, Wellington, http://qualityplanning.org.nz/sites/default/files/2018-11/Resource%20Consent%20Conditions.pdf

Roper-Lindsay, J., Fuller S.A., Hooson, S., Sanders, M.D., Ussher, G.T. 2018. *Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems. 2nd edition*. Environment Institute of Australia and New Zealand Inc., Melbourne, www.eianz.orgdocument/item/4447

Walker, S., Bellingham, P.J., Kaine, G., Richardson, S., Greenhalgh, S., Simcock, R., Brown, M.A., Stephens, R.T.T, Lee, W.G. 2021. What effects must be avoided, remediated or mitigated to maintain indigenous biodiversity? *New Zealand Journal of Ecology* 45(2), https://newzealandecology.org/nzje/3445.pdf

Wiser, S.K., Buxton, R.P., Clarkson, B.R., Hoare, R.J.B., Holdaway, R.J., Richardson, S.J., Smale, M.C., West, C., Williams, P.A. 2013. New Zealand's naturally uncommon ecosystems. In Dymond, J.R. ed. *Ecosystem services in New Zealand – conditions and trends*, Manaaki Whenua Press, Lincoln, New Zealand, pp. 49–61, www.landcareresearch.co.nz/publications/researchpubs/uncommon-ecosystems-book-section.pdf

Appendices

APPENDIX 1:
Relevant objectives and policies from the Natural Resources Plan

Objective O25:

Biodiversity, aquatic ecosystem health and mahinga kai in fresh water bodies and the coastal marine area are safeguarded such that:

A) water quality, flows, water levels and aquatic and coastal habitats are managed to maintain biodiversity, aquatic ecosystem health and mahinga kai, and

B) where an objective in Tables 3.4, 3.5, 3.6, 3.7 or 3.8 is not met, a fresh water body or coastal marine area is improved over time to meet that objective.

Objective O35:

Ecosystems and habitats with significant indigenous biodiversity values are protected from the adverse effects of use and development and, where appropriate, restored to a healthy functioning state, including as defined by Tables 3.4, 3.5, 3.6, 3.7 and 3.8.

Policy P32:

Adverse effects on biodiversity, aquatic ecosystem health, and mahinga kai

Adverse effects on biodiversity, aquatic ecosystem health and mahinga kai shall be managed by:

A) in the first instance, activities that risk causing adverse effects on the values of a Schedule F ecosystem or habitat, other than activities carried out in accordance with a wetland restoration management plan, shall avoid locating within these ecosystems and habitats. If the ecosystem or habitat cannot be avoided, the adverse effects of activities shall be managed by b) to g) below.

B) avoiding adverse effects where practicable, and

C) where adverse effects cannot be avoided, minimising them where practicable, and

D) where adverse effects cannot be minimised they are remedied, except as provided for in e) to g),

E) where more than minor residual adverse effects cannot be avoided, minimised, or remedied, biodiversity offsetting is provided where possible, and

F) if biodiversity offsetting of more than minor residual adverse effects is not possible, biodiversity compensation is provided, and

the activity itself is avoided if biodiversity compensation cannot be undertaken in a way that is appropriate as set out in Schedule G3, including Clause 2 of that schedule.

In relation to activities within the beds of lakes, rivers and natural wetlands, e) to g) only apply to activities which meet the exceptions in Policy P102.

A precautionary approach shall be used when assessing the potential for adverse effects on ecosystems and habitats with significant indigenous biodiversity values identified in Schedule F.

Note: Policy P39A applies to the management of adverse effects on indigenous biodiversity values within the coastal environment.

Proposals for biodiversity mitigation under b) to d) above, and biodiversity offsetting, and biodiversity compensation will be assessed against the principles listed in Schedule G1 (biodiversity mitigation), and Schedule G2 (biodiversity offsetting), and Schedule G3 (biodiversity compensation).

Policy P39:

Adverse effects on outstanding water bodies

The adverse effects of use and development on outstanding water bodies and their significant values identified in Schedule A (outstanding water bodies) shall be avoided, unless there is a functional need for operation, maintenance or upgrade of existing regionally significant infrastructure in which case the adverse effects of activities shall be managed by:

A) avoiding adverse effects where practicable, and

B) where adverse effects cannot be avoided, minimising them, and

C) where adverse effects cannot be minimised, they are remedied where practicable, and

D) where residual adverse effects cannot be avoided, minimised, or remedied, offsetting is provided where possible.

Proposals for biodiversity mitigation and biodiversity offsetting will be assessed against the principles listed in Schedule G1 (biodiversity mitigation), and-Schedule G2 (biodiversity offsetting).

A precautionary approach shall be used when assessing the potential for adverse effects on outstanding water bodies.

Where more than minor adverse effects on outstanding water bodies cannot be avoided, minimised, remedied or redressed through biodiversity offsets, the activity is inappropriate.

Policy P39A:

Indigenous biodiversity values within the coastal environment

To protect the indigenous biodiversity values, use and development within the coastal environment shall:

A) avoid adverse effects on indigenous biodiversity values that meet the criteria in Policy 11(a) of the NZCPS, namely:

   i) indigenous taxa listed as threatened or at risk in the NZ Threat classification system lists or as threatened by the International Union for Conservation of Nature and Natural Resources, and

   ii) indigenous ecosystems and vegetation types in the coastal environment that are threatened or are naturally rare, and

   iii) habitats of indigenous species where the species are at the limit of their natural range, or are naturally rare, and

   iv) areas in the coastal environment containing nationally significant examples of indigenous community types, and

   v) areas set aside for full or partial protection of indigenous biological diversity under other legislation, and

B) avoid significant adverse effects on indigenous biodiversity values that meet the criteria in Policy 11(b) (i) – (vi) of the NZCPS, and

C) manage non-significant adverse effects of activities on indigenous biodiversity values that meet the criteria in Policy 11(b) of the NZCPS by:

   i) avoiding adverse effects where practicable, and

   ii) where adverse effects cannot be avoided, minimising them where practicable, and

   iii) where adverse effects cannot be minimised they are remedied where practicable, and

   iv) where residual adverse effects cannot be avoided, minimised, or remedied, biodiversity offsetting is provided where possible, and

   v) if biodiversity offsetting of residual adverse effects is not possible, the activity itself is avoided unless the activity is regionally significant infrastructure then biodiversity compensation is provided, and

   vi) the activity itself is avoided if biodiversity compensation cannot be undertaken in a way that is appropriate as set out in Schedule G3, including Clause 2 of that schedule, and

D) for all other sites within the coastal environment not meeting Policy 11(a) or (b) of the NZCPS, manage significant adverse effects on indigenous biodiversity values using the effects management hierarchy set out in b) to g) of Policy P32.

Policy P42:

Managing effects on ecosystems and habitats with significant indigenous biodiversity values from activities outside these ecosystems and habitats

In order to protect the ecosystems and habitats with significant indigenous biodiversity values in accordance with Policy P40, particular regard shall be given to managing the adverse effects of use and development in areas outside of these ecosystems and habitats on physical, chemical and biological processes to:

A) maintain ecological connections within and between these habitats, or

B) provide for the enhancement of ecological connectivity between fragmented habitats through biodiversity offsets, and

C) provide adequate buffers around ecosystems and habitats with significant indigenous biodiversity values, and

D) avoid cumulative adverse effects on, and the incremental loss of significant, and

E) indigenous biodiversity values.

Policy P45:

Managing adverse effects on sites with significant mana whenua values

Sites with significant mana whenua values identified in Schedule C shall be protected and restored by managing use and development in the following manner:

A) in the first instance, avoid locating activities within sites listed in Schedule C,

B) require any more than minor adverse effects of activities on the significant mana whenua values of the site to be evaluated through a

cultural impact assessment undertaken by the relevant mana whenua as identified in Schedule C,

C) significant adverse effects of an activity on the significant values of the site shall be avoided.

D) other adverse effects shall be managed in accordance with tikanga and kaupapa Māori responding to recommendations in a cultural impact assessment to:

   i) avoid more than minor adverse effects on the significant values of the site, and

   ii) where more than minor adverse effects cannot be avoided, minimising them, and

   iii) where more than minor adverse effects cannot be avoided and/or minimised, they are remedied, and

E) where more than minor adverse effects on significant mana whenua values identified in Schedule C (mana whenua) cannot be avoided, minimised, or remedied, the activity is inappropriate. Offsetting of effects on sites with significant mana whenua values is inappropriate, except where provided for by in Policy P45A, and

F) the relevant mana whenua as identified in Schedule C shall be considered to be an affected party under RMA s95E for all activities which require resource consent within a Schedule C site where the adverse effects are minor or more than minor, unless the application is publicly notified.

Policy P102:

Reclamation or drainage of the beds of lakes and rivers

The reclamation or drainage of the beds of lakes and rivers and natural wetlands shall be avoided, in particular those identified in Schedules A (outstanding water bodies) and C (mana whenua), except where the reclamation or drainage is:

A) partial reclamation of a river bank for the purposes of flood prevention or erosion control, or

B) associated with a growth and/or development framework or strategy approved by a local authority under the Local Government Act 2002, or

C) necessary to enable the development, operation, maintenance and upgrade of regionally significant infrastructure, or

D) associated with the creation of a new river bed and does not involve piping of the river, and

E) for the purpose of forming a reasonable crossing point, and

F) in respect of a) to e) there are no other practicable alternative methods of providing for the activity, or

G) the reclamation or drainage is of an ephemeral flow path.

APPENDIX 2: Case study Stream reclamation due to quarry expansion

Overview of application

These biodiversity mitigation, offsetting, and compensation tables have been completed for a hypothetical project that involves the permanent reclamation (loss) of a stream reach to allow for a quarry expansion. The below tables were completed by an independent consultant and are intended to provide readers with a worked example using the principles identified in the Natural Resources Plan for the Wellington Region. It is assumed that the full details of the application would be provided in the application's Assessment of Environmental Effects (AEE) which these tables summarise. The AEE would also include the relevant technical reports and the draft consent conditions.

The proposed mitigation for this application includes avoidance of spawning and migration seasons for fish species known from the stream; minimising fine sediment generation via an erosion and sediment control plan (ESCP); and minimising mortality of fish and large macroinvertebrates by undertaking fish relocation. Following mitigation there is still a residual adverse effect as mitigation could not address the permanent loss of stream habitat. Therefore, offsetting is proposed in the form of a diversion channel that will be designed to provide better aquatic habitat than the existing channel. The length and area of this diversion channel is to be calculated via the Stream Ecological Valuation Environmental Compensation Ratio (SEV ECR). Due to space constraints on site, the new diversion channel fails to provide the full area of freshwater habitat needed to be offset. Hence there is still a small residual adverse effect following biodiversity offsetting. This effect is proposed to be redressed via biodiversity compensation in the form of a research grant.

Schedule G1:
Alignment with biodiversity mitigation principles

Schedule G1: **Principle 1** – Adherence to the effects management hierarchy		
Wording	**Guidance section**	**Explanation**
The proposed biodiversity mitigation will be assessed in accordance with the effects management hierarchy set out in Policies P32, P39, and P39A. Any proposal for biodiversity mitigation will document the appropriate measures taken to respectively avoid, minimise, or remedy any adverse effects of the activity on biodiversity.	Table 2, page 25	The permanent reclamation of a XXX m reach of natural stream channel to allow for quarry expansion has been determined to be unavoidable as outlined in Section XX of the project AEE. It is proposed to manage the adverse effects of this activity on biodiversity, in the first instance by taking mitigation actions. Any residual adverse effects following mitigation, will be redressed via biodiversity offsetting and biodiversity compensation. Proposed mitigation actions have been detailed in the Project AEE and are summarised here: • Avoidance of spawning and migration periods of indigenous fish species known from the catchment (banded kōkopu, kōaro, longfin tuna/eel) during the construction period • Minimise fine sediments entering the stream via erosion and sediment control best practices as outlined in Section XX of the Project AEE and in the draft Erosion and Sediment Control Plan (ESCP). This will act to avoid and minimise sedimentation of the stream which is known to have adverse impacts on stream biodiversity • Undertaking fish and large invertebrate (i.e., kōura/ freshwater crayfish) relocation by suitably qualified practitioners from the work area to suitable habitats in the same waterway. This will minimise fish and large invertebrate mortality during construction. This is further detailed in the project's Ecological Management Plan (EMP). The adverse effects caused by the loss of open stream habitat via reclamation cannot be fully mitigated by the above actions as there is permanent loss of stream habitat, hence biodiversity offsetting and biodiversity compensation will the required (see subsequent tables).

Schedule G1: **Principle 2** – Additional conservation outcomes		
Wording	**Guidance section**	**Explanation**
Any proposal for biodiversity mitigation will demonstrate that the actions to mitigate adverse effects on biodiversity are additional to what would have occurred without the proposed mitigation, including any activities required by any associated resource consent/s.	Table 2, page 26	The above-described mitigation actions are specific to the activity and would not have occurred otherwise.

Schedule G1: **Principle 3** – Landscape context

Wording	Guidance section	Explanation
Any proposals for biodiversity mitigation will: A) demonstrate that the proposed actions to mitigate adverse effects will be undertaken at the same location as the activity that causes them, and	Table 2, page 26	All proposed mitigation actions will be undertaken within or directly adjacent to the site of impact. Fish and large macroinvertebrates will be relocated to suitable locations upstream and/or downstream of the project area, with the exact sites depending on the presence of suitable habitats.
B) complement and contribute to the protection of significant indigenous vegetation, or the habitats of threatened fauna at the local, regional or national level, and		The proposed mitigation actions will contribute to the protection of indigenous species via avoidance of spawning and migration periods during stream reclamation works and physically relocating individuals from the stream reclamation site to a suitable habitat within the stream prior to the reclamation. No "Threatened: Nationally Critical, Nationally Endangered, or Nationally Vulnerable" freshwater fauna are known from the stream, although some "At Risk : Declining" species are present (i.e., longfin eel, kōaro).
C) take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and		This assessment has taken into account all available information on the biological values of the site and supports an ecosystem-scale approach. Regarding cultural values, the local mana whenua have been consulted and have provided written approval for the project as a whole, including the proposed mitigation actions. Information on the social values of the site have been considered and are provided in section XX of the AEE.
D) take into consideration other likely future developments, such as competing land use pressures, within the landscape.		It is expected that any future developments in the catchment will have their own effects management regimes specific to their location and proposed activity. See section "Alignment with biodiversity offsetting principles" for more details.

Schedule G1: **Principle 4** – Long-term outcomes

Wording	Guidance section	Explanation
Any proposals for biodiversity mitigation should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the activity's impacts, and preferably in perpetuity. The proposed biodiversity mitigation will: E) demonstrate that management arrangements, legal arrangements (e.g. covenants) and financial arrangements (e.g. bonds) are in place for as long as the adverse effects of the activity, and preferably in perpetuity, and	Table 2, page 27	Erosion and sediment controls and actions during construction will be managed and maintained until all bare earth surfaces are stabilised as per the definition of stabilised in the resource consent. This is detailed in the ESCP. The requirements around avoidance of spawning and migration periods during channel reclamation, and the relocation of fish and large invertebrates, will have resource consent conditions, as well as management arrangements detailed in the project's EMP.
F) be able to be implemented and enforced in line with any resource consent conditions associated with the activity. These conditions should include: i) specific, measurable and time-bound targets, and ii) mechanisms for adaptive management using the results of periodic milestones to determine whether the biodiversity mitigation is on track and how to rectify if necessary, and		Erosion and sediment controls will be implemented, enforced, and monitored as per the requirements of draft consent conditions XX-XX. The avoidance of a key fish spawning and migration periods is confirmed as per draft consent condition XX. Fish and large invertebrate relocation will be implemented as per the procedure detailed in the project's EMP, which is required as per draft consent condition XX.
G) establish roles and responsibilities for managing, governing, monitoring and enforcing the biodiversity mitigation, and take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and		The roles and responsibilities relating to ESC are outlined in the ESCP. Those relating to fish relocation are outlined in the project's EMP.
H) undertake methods by which analysis will identify when milestones of the biodiversity mitigation are not achieved, and the causes of non-achievement, and how to revise the management plan to avoid similar occurrences.		Methods relating to monitoring of ESC during construction are outlined in the ESCP. Fish and large macroinvertebrate relocation will require reporting of how many individuals and which species were relocated, and where they were relocated to.

Schedule G2:
Alignment with biodiversity offsetting principles

Schedule G2: **Principle 1** – Adherence to the effects management hierarchy

Wording	Guidance section	Explanation
The proposed biodiversity offset will be assessed in accordance with the effects management hierarchy set out in Policies P32, P39 and P39A. Any proposal for a biodiversity offset will demonstrate how it addresses the residual adverse effects of the activity.	Table 3, page 29	As described above in the "Alignment with biodiversity mitigation principles" table, mitigation actions are proposed. Because the stream reclamation results in the permanent loss of open, natural stream habitat, it is not possible to address all the adverse effects via mitigation. Therefore, biodiversity offsetting in the form of creation of a new stream channel is proposed to redress residual adverse effects. This stream diversion will also include habitat enhancement (relative to the condition of the section of stream being lost) in the form of improved instream physical habitat via installation of stable habitat elements (e.g., woody debris, boulder and cobble clusters), and riparian planting with native vegetation that will, in time, result in a closed canopy over the stream.

Schedule G2: **Principle 2** – Limits to what can be offset

Wording	Guidance section	Explanation
Consideration of biodiversity offsetting is inappropriate where: A) there is no appropriate site, knowledge, proven methods, expertise or mechanism available to design and implement an adequate biodiversity offset, or	Table 3, page30	The creation of new, open stream length via a diversion around the area of impact (stream reclamation) is a relatively common method of avoiding permanent stream loss. Further, it has been shown that such channels are rapidly colonised by stream biota. If properly designed and constructed, such diversion channels can provide at least as good habitat as that being lost and also provide the opportunity for creating enhanced conditions relative to the stream length being lost.
B) when an activity is anticipated to cause residual adverse effects on an area after an offset has been implemented where: i) the ecosystem or species are "threatened" (as defined by the New Zealand Threat Classification System categories: Nationally Critical (NC), Nationally Endangered (NE), and Nationally Vulnerable (NV), or ii) the ecosystem is naturally uncommon.		The proposed mitigation actions will contribute to the protection of indigenous species via avoidance of spawning and migration periods during stream reclamation works and physically relocating individuals from the stream reclamation site to a suitable habitat within the stream prior to the reclamation. No "Threatened: Nationally Critical, Nationally Endangered, or Nationally Vulnerable" freshwater fauna are known from the stream, although some "At Risk: Declining" species are present (i.e., longfin eel, kōaro).

Schedule G2: **Principle 3** – Additional conservation outcomes

Wording	Guidance section	Explanation
Any proposal for a biodiversity offset will demonstrate that the actions taken to achieve positive effects on biodiversity are additional to what would have occurred without the proposed biodiversity offset, including any activities required by any associated resource consent/s.	Table 3, page 30	It is our view that a diversion channel may be considered as a biodiversity offset as long as what is being created is of better ecological condition than both what is being lost (the existing channel) and what could have been built to convey the stream. If for example, the diversion channel was designed purely to meet hydraulic flow conveyance requirements, a uniform, straight channel would result, and could not realistically be considered a biodiversity offset. However, the proposed stream diversion channel has been meandered as much as available space allowed, will include riparian planting, and include instream habitat features (e.g., woody debris, boulder and cobble clusters). Hence the designed channel will have greater habitat area and improved habitat quality compared to a channel created purely to convey water; meaning the proposed channel contains many features that would not have been included in the absence of the proposed biodiversity offset.

Schedule G2: **Principle 4** – Landscape context

Wording	Guidance section	Explanation
Any proposals for biodiversity offsetting will: C) demonstrate that positive effects are achieved preferentially, first at the site, then the relevant catchment, then within the ecological district, except where there is an appropriate ecological rationale for doing otherwise, and	Table 3, page 31	The site of the proposed biodiversity offset is directly adjacent to the area of impact (i.e., the site of stream reclamation). Figure XX in the Project AEE shows how the proposed stream diversion relates to the site of proposed stream reclamation.
D) complement and contribute to the protection of significant indigenous vegetation, or the habitats of threatened fauna at the local, regional or national level, and		No "Threatened: Nationally Critical, Nationally Endangered, or Nationally Vulnerable" freshwater fauna are known from the stream, although some "At Risk: Declining" species are present (i.e., longfin eel, kōaro). However, the proposed stream diversion will create a section of stream that is of greater habitat area and improved riparian and instream condition from a biological perspective (i.e., greater stream shading, increase instream habitat variability) than the existing section of stream to be reclaimed.
E) take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and		The proposed diversion channel has been designed specifically to provide habitat for species known from the stream (e.g., pool habitat for banded kōkopu and longfin eel/tuna and faster flowing habitat with a coarse substrate for kōaro). Local mana whenua were also consulted about the channel design and as detailed in the Project AEE, have approved the concept design. The proposed diversion channel will allow fish and macroinvertebrate passage to upstream and downstream reaches, supporting an ecosystem-scale approach.
F) take into consideration other likely future developments, such as competing land use pressures, within the landscape.		The diversion channel has been designed to be permanent and provide freshwater habitat in perpetuity. It is at the edge of the quarrying operation in an area where quarrying has ceased. Following cessation of all quarrying activities on the property, which is estimated to occur between 2030 and 2035, the entire site will be rehabilitated as per conditions XX-XX of the quarry's existing land use consent (consent no. XXXXXXX). At this time, it is anticipated the diversion channel and associated riparian vegetation will be incorporated into the overall site rehabilitation landscape plan. The legal arrangements to ensure permanent protection of the diversion channel from future development is detailed in Section XX of the project's AEE.

Schedule G2: **Principle 5** – Long-term outcomes

Wording	Guidance section	Explanation
Any proposals for biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the activity's impacts, and preferably in perpetuity. The proposed biodiversity offset will: G) demonstrate that management arrangements, legal arrangements (e.g. covenants) and financial arrangements (e.g. bonds) are in place that allow the positive effects to endure as long as the residual adverse effects of the activity, and preferably in perpetuity, and	Table 3, page 32	The diversion channel has been designed to be permanent and provide freshwater habitat in perpetuity. It is at the edge of the quarrying operation in an area where quarrying has ceased. Following cessation of all quarrying activities on the property, which is estimated to occur between 2030 and 2035, the entire site will be rehabilitated as per conditions XX-XX of the quarry's existing land use consent (consent no. XXXXXXX). At this time, it is anticipated the diversion channel and associated riparian vegetation will be incorporated into the overall site rehabilitation landscape plan. The legal arrangements to ensure permanent protection of the diversion channel from future development is detailed in Section XX of the project's AEE.
H) be able to be implemented and enforced in line with any resource consent conditions associated with the activity. These conditions should include: i) specific, measurable and time-bound targets, and ii) mechanisms for adaptive management using the results of periodic milestones to determine whether the biodiversity offset is on track and how to rectify if necessary, and		The proposed diversion channel will be implemented as per the requirements of draft consent conditions XX-XX. Monitoring of the various components of the diversion channel (freshwater fauna, instream habitat, riparian habitat) are proposed for 1 year, 3 years, 5 years, and 10 years and will provide data to enable the implementation of the adaptive management regime that will be detailed in the EMP. The requirement to develop a monitoring scheme is included in draft consent condition XX.

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Schedule G2: Principle 5 continued...

I) establish roles and responsibilities for managing, governing, monitoring and enforcing the biodiversity offset, and	Table 3, page 32	The ongoing management and monitoring of the proposed diversion channel will be undertaken by the quarry operator and their nominated relevant consultants. These roles are outlined in the project AEE.
J) undertake methods by which analysis will identify when milestones of the biodiversity offset are not achieved, and the causes of non-achievement, and how to revise the offset management plan to avoid similar occurrences.		The monitoring scheme required by draft consent conditions XX-XX to be included in the EMP will detail the milestones to be met by the biodiversity offset and methodologies to determine these.

Schedule G2: **Principle 6** – No net biodiversity loss

Wording	Guidance section	Explanation
Any proposals for biodiversity offsets will provide measurable positive effects on biodiversity preferentially, first at the site, then the relevant catchment, then within the ecological district, which can reasonably be expected to result in no net loss and preferably a net gain of biodiversity. No net loss means no reasonably measurable overall reduction in: K) the diversity of indigenous species or recognised taxonomic units; and	Table 3, pages 33–34	It is anticipated the diversion channel will be colonised by the majority of freshwater species present in the section to be reclaimed and potentially a greater number of species given the longer section of new channel and the increased habitat variability the new channel will provide. This will be measured via the monitoring scheme mentioned previously. Additionally, the riparian plantings will certainly increase indigenous plant diversity compared to the current situation.
L) indigenous species' population sizes (taking into account natural fluctuations) and long term viability; and		It is anticipated that the diversion channel will contain increased population sizes of common freshwater species compared to the section to be reclaimed as it will provide an overall greater area of freshwater habitat.
M) the natural range inhabited by indigenous species; and		The diversion channel will allow for the upstream and downstream passage of fish and invertebrates, hence will not have any impact on the natural ranges of any indigenous species.
N) the range and ecological health and functioning of assemblages of indigenous species, community types and ecosystems; and		The diversion channel will be designed to mimic a natural stream channel and, as such, support natural ecosystem functioning. The ecological health of a given stream reach is predominantly dictated by upstream land use. This project has no impact on upstream catchment land use and as such significant changes in ecological health compared to the current situation are not expected as a result of this proposal. However, at the reach-scale, as the diversion channel and associated riparian vegetation become established some minor improvements in ecological health may be realised.
O) the cultural use values of indigenous habitats or species.		The site has not been generally accessible to allow cultural use for at least 60 years and this project will not change this as the property is still a working quarry.
Any proposals for biodiversity offset will demonstrate: P) that an explicit calculation of loss and gain has been undertaken as the basis for the biodiversity offset design, and should demonstrate the manner in which no net loss, and preferably net gain of biodiversity, can be achieved by the biodiversity offset, and		The SEV was used to generate an ECR, which was then used to calculate the area of stream habitat required to achieve no net biodiversity loss. The SEV and ECR calculations are detailed in the freshwater ecology technical report. Because of site constraints only 85% of the required habitat area could be achieved via the proposed diversion channel. Because of the relatively small amount of residual adverse effect remaining after biodiversity offsetting is applied, it was deemed impractical and inefficient to try to find another location for further offsetting. As such we propose redressing the remaining residual adverse effects via biodiversity compensation. This is further detailed in the "Alignment with biodiversity compensation principles" table.

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Schedule G2: Principle 6 continued...

Q) that the biodiversity offset design and implementation should include provisions for addressing sources of uncertainty and risk of failure in delivering the biodiversity offset, and	Table 3, pages 33–34	The main risks of failure for the diversion channel to achieve the desired biodiversity offset are related to the potential effects of extreme rainfall events causing flows that damage the channel, particularly in the period just after completion when newly planted riparian vegetation is particularly vulnerable. This risk is being controlled by designing the new channel to include a defined low channel and wider flood flow channel such that it can convey flows of XX annual exceedance probability as outlined in Section XX of the project AEE. Further, draft consent condition XX requires maintenance, and if necessary, replacement of lost riparian vegetation for XX years following completion of construction.
R) that the offset is applied so that the ecological values being achieved through the offset are the same or similar to those being lost, and		The proposed diversion channel is a direct replacement for the section of stream being reclaimed and as such redresses the same ecological values as those being lost.
S) the intention to include and use a biodiversity offset management plan that: i) sets out baseline information on the indigenous biodiversity that is potentially impacted by the proposed activity at both donor and recipient sites, and ii) demonstrates how the requirements set out in this schedule will be carried out, and iii) identifies the monitoring approach that will be used to demonstrate how the matters set out in this schedule have been addressed over an appropriate timeframe.		The project EMP will include a section on management and monitoring of the diversion channel biodiversity offset. Baseline information was collected from the stream reclamation site (impact site) as part of the SEV, while a terrestrial vegetation and habitat survey of the stream diversion site prior to construction has concluded a less than minor adverse impact on indigenous biodiversity. More detail is provided in Section XX of the project AEE. The biodiversity offset section of the EMP will demonstrate how the requirements of this schedule will be implemented. Monitoring of the various components of the diversion channel (freshwater fauna, instream habitat, riparian habitat) are proposed for 1 year, 3 years, 5 years, and 10 years and will be used to demonstrate how the requirements of this schedule have been addressed.

Schedule G3:
Alignment with biodiversity compensation principles

Schedule G3: **Principle 1** – Adherence to the effects management hierarchy

Wording	Guidance section	Explanation
The proposed biodiversity compensation will be assessed in the context of the effects management hierarchy set out in Policies P32 and P39A. Any proposal for biodiversity compensation will demonstrate how it addresses the residual adverse effects of the activity.	Table 4, page 35	As described in the "Alignment with biodiversity mitigation principles" and "Alignment with biodiversity offsetting principles" tables, the effects management hierarchy has been followed. After applying mitigation and offsetting, a small residual effect remains. This is due to site constraints limiting the biodiversity offset of habitat creation via a diversion channel to achieving 85% of the required new freshwater habitat area under the calculations provided in the SEV ECR. This leaves a deficit of 15% (or XX m2), meaning a residual adverse effect remains. We consider it impractical and inefficient to find an additional offsetting site to cover such a small component of the overall adverse effect. Hence, we propose biodiversity compensation in the form of a research grant to specifically address the question of whether the inclusion of instream habitat features in constructed stream diversions provide a benefit to biodiversity. This will provide some empirical data on how effective such instream habitat features are for augmenting indigenous biodiversity in constructed diversion channels and help guide their use in future diversion channel designs.

Schedule G3: **Principle 2** – Limits to biodiversity compensation

Wording	Guidance section	Explanation
Consideration of biodiversity compensation is inappropriate where an activity is anticipated to cause residual adverse effects on an area after biodiversity compensation has been implemented where: i) the ecosystem or species are "threatened" (as defined by the New Zealand Threat Classification System categories: Nationally Critical (NC), Nationally Endangered (NE), and Nationally Vulnerable (NV), or ii) the ecosystem is naturally uncommon.	Table 4, page 35	No residual adverse effect is anticipated following biodiversity compensation. Further, no "Threatened: Nationally Critical, Nationally Endangered, or Nationally Vulnerable" freshwater fauna are known from the stream, although some "At Risk: Declining" species are present (i.e., longfin eel, kōaro). The ecosystem is not naturally uncommon.

Schedule G3: **Principle 3** – Landscape context

Wording	Guidance section	Explanation
Any proposal for biodiversity compensation will demonstrate that the actions taken to achieve positive effects on biodiversity are additional to what would have occurred without the proposed biodiversity compensation, including any activities required by any associated resource consent/s.	Table 4, page 36	The biodiversity compensation in the form of a research grant is proposed directly as a result of the inability of the biodiversity offset to address all residual adverse effects. Hence, it is additional to anything else proposed or required by an associated resource consent.

Schedule G3: **Principle 4** – Landscape context

Wording	Guidance section	Explanation
Any proposals for biodiversity compensation will: A) demonstrate that positive effects are achieved preferentially, first at the site, then the relevant catchment, then within the ecological district, except where there is an appropriate ecological rationale for doing otherwise, and	Table 4, pages 36–37	The findings of research undertaken with the grant will provide knowledge relevant to monitoring the success of the proposed stream diversion biodiversity offset, which is directly adjacent the site of impact. These findings will also be relevant to the design of future channel diversions in the catchment, ecological district, and beyond.
B) complement and contribute to the protection of significant indigenous vegetation, or the habitats of threatened fauna at the local, regional or national level, and		The findings of research undertaken with the grant will provide knowledge relevant to the future design of diversion channels that may complement and contribute to the protection of threatened fauna habitats.
C) take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and		The findings of research undertaken with the grant will provide knowledge relevant to understanding the biological outcomes of stream diversions, which have flow on effects to understanding cultural and social values of such constructed channels.
D) take into consideration other likely future developments, such as competing land use pressures, within the landscape.		The findings of research undertaken with the grant will have direct benefits for stream diversion designs that may result from future development within the catchment or elsewhere.

Schedule G3: **Principle 5** – Long-term outcomes

Wording	Guidance section	Explanation
Any proposals for biodiversity compensation should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the activity's impacts, and preferably in perpetuity. The proposed biodiversity compensation will: E) demonstrate that management arrangements, legal arrangements (e.g. covenants) and financial arrangements (e.g. bonds) are in place that allow the positive effects to endure as long as the residual adverse effects of the activity, and preferably in perpetuity, and	Table 4, page 38	Because the proposed biodiversity compensation is in the form of a research grant, the positive outcome is in the form of knowledge that can contribute to guiding future diversion channel design. Research findings and improved design of diversion channels are a permanent positive effect of the proposed biodiversity compensation.
F) be able to be implemented and enforced in line with any resource consent conditions associated with the activity. These conditions should include: i) specific, measurable and time-bound targets, and ii) mechanisms for adaptive management using the results of periodic milestones to determine whether the biodiversity compensation is on track and how to rectify if necessary, and		Draft consent conditions XX-XX specifically address the proposed biodiversity compensation and include timeframes for undertaking the research and providing the results.
G) establish roles and responsibilities for managing, governing, monitoring and enforcing the biodiversity compensation, and		Draft consent conditions XX-XX specifically address the proposed biodiversity compensation and outline who will be managing and overseeing the grant and subsequent research outputs.
H) undertake methods by which analysis will identify when milestones of the biodiversity compensation are not achieved, and the causes of non-achievement, and how to revise the compensation management plan to avoid similar occurrences.		Draft consent conditions XX-XX specifically address the proposed biodiversity compensation and outline key milestones, being awarding of grant, completing research field work, and providing a report of findings.

Schedule G3: **Principle 6** – Scale of biodiversity compensation		
Wording	**Guidance section**	**Explanation**
The values to be lost through the activity to which the biodiversity compensation applies must be addressed by positive effects for indigenous biodiversity that outweigh the adverse effects on indigenous biodiversity. Any proposals for biodiversity compensation will demonstrate: I) that an explicit calculation of loss and gain has been undertaken as the basis for the biodiversity compensation design, and	Table 4, page 39	We have calculated the value of the research grant based on the estimated construction costs that will be saved due to the biodiversity offsetting diversion channel only providing 85% of the required freshwater habitat area. Hence the value of the research grant is the approximate additional construction cost (time and materials) that would have been required to create the remaining 15% of diversion channel, should site constraints not have prevented this from occurring. This means the grant value is directly related to the effects management hierarchy, rather than an arbitrary sum. These calculations are outlined in the project AEE and the proposed biodiversity compensation research granted is valued at $XX,XXX.
J) that the biodiversity compensation design and implementation includes provisions for addressing sources of uncertainty and risk of failure in delivering the biodiversity compensation, and		By providing biodiversity compensation in the form of a research grant, there are inherent risks that are generally applicable to all research, such as the inability for the researcher(s) to complete the work due to unforeseen circumstances. To minimise such risks, the grant will only be provided to an organisation and/or individual with a proven track record and good reputation for undertaking independent research.
K) that appropriate expertise and proven methods are available to design and implement an adequate biodiversity compensation.		The proposed research grant will provide funding for a study to investigate if the inclusion of instream habitat features in constructed stream diversions provides a benefit to biodiversity. The exact study design and methodologies used will be determined by the researcher. However, stream ecological studies are relatively commonplace in New Zealand and around the world, with numerous proven and standardised techniques available to sample various aspects of stream structure and functioning.

APPENDIX 3: Case study Runway encroachment into a saltmarsh wetland

Overview of application

These biodiversity mitigation and offsetting tables have been completed for a hypothetical project that involves the loss of a saltmarsh wetland to allow for the extension of an airport runway. The below tables were completed by an independent consultant and are intended to provide readers with a worked example using the principles identified in the Natural Resources Plan for the Wellington Region. It is assumed that the full details of the application would be provided in the application's Assessment of Environmental Effects (AEE) which these tables summarise. The AEE would also include the relevant technical reports and the draft consent conditions.

The proposed mitigation for this project includes minimising adverse effects by relocating proposed vehicle access tracks and a hardstand storage area to an adjacent site. Residual adverse effects are proposed to be offset through wetland creation and restoration measures in a nearby area of saltmarsh wetland and exotic pasture. Ten years after restoration has been completed, the proposed offset would be expected to result in a net gain for saltmarsh wetland biodiversity.

Schedule G1:
Alignment with biodiversity mitigation principles

Schedule G1: **Principle 1** – Adherence to the effects management hierarchy

Wording	Guidance section	Explanation
The proposed biodiversity mitigation will be assessed in accordance with the effects management hierarchy set out in Policies P32, P39, and P39A. Any proposal for biodiversity mitigation will document the appropriate measures taken to respectively avoid, minimise, or remedy any adverse effects of the activity on biodiversity.	Table 2, pp. 22–24	XXXX Airport Ltd seeks to expand its runway to encroach into an area of saltmarsh wetland. Due to the configuration of the wetland relative to the existing runway, there is no way to completely avoid adverse effects to the wetland from the runway extension. The runway extension is considered to be a project of national importance. A full options analysis has been undertaken and detailed in section XX of the AEE. The initial proposal also included light vehicle tracks and a new hardstand storage area in the location of the wetland. Effects on the wetland could be minimised by modifying this aspect of the proposal and relocating the vehicle access tracks and hardstand storage area to an adjacent site where the wetland would not be affected by these activities. There is no opportunity to remedy adverse wetland effects from the runway extension works as the activity is a permanent reclamation. This means wetland reclamation will result in residual adverse biodiversity effects which will remain after mitigation measures (i.e., measures to avoid, minimise, or remedy) have been applied. Residual adverse effects must be redressed either through biodiversity offsets or biodiversity compensation measures.

Schedule G1: **Principle 2** – Additional conservation outcomes

Wording	Guidance section	Explanation
Any proposal for biodiversity mitigation will demonstrate that the actions to mitigate adverse effects on biodiversity are additional to what would have occurred without the proposed mitigation, including any activities required by any associated resource consent/s.	Table 2, pp. 22–24	As detailed in section XX of the AEE, the only mitigation activities which are possible are redesigning the vehicle tracks and hardstand to minimise adverse effects to the salt marsh wetland. Avoidance or remediation/restoration are not possible.

Schedule G1: **Principle 3** – Landscape context

Wording	Guidance section	Explanation
Any proposals for biodiversity mitigation will:	Table 2, pp. 22–24	
A) demonstrate that the proposed actions to mitigate adverse effects will be undertaken at the same location as the activity that causes them, and		Minimisation is the only valid mitigation activity. These actions will occur at the same location as the activity that causes them.
B) complement and contribute to the protection of significant indigenous vegetation, or the habitats of threatened fauna at the local, regional or national level, and		The proposed mitigation actions will contribute to the protection of indigenous species by minimising adverse effects on the saltmarsh wetland.
C) take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and		This assessment has taken into account all available information on the biological values of the site and supports an ecosystem-scale approach. Regarding cultural values, the local mana whenua have been consulted and have provided written approval for the project as a whole, including the proposed mitigation actions. Information on the social values of the site have been considered and are provided in section XXX of the AEE.
D) take into consideration other likely future developments, such as competing land use pressures, within the landscape.		It is expected that any future developments in the catchment will have their own effects management regimes specific to their location and proposed activity. See section “Alignment with biodiversity offsetting principles” for more details.

Schedule G2: **Principle 4** – Long-term outcomes		
Wording	**Guidance section**	**Explanation**
Any proposals for biodiversity mitigation should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the activity's impacts, and preferably in perpetuity. The proposed biodiversity mitigation will: E) demonstrate that management arrangements, legal arrangements (e.g. covenants) and financial arrangements (e.g. bonds) are in place for as long as the adverse effects of the activity, and preferably in perpetuity, and		N/A
F) be able to be implemented and enforced in line with any resource consent conditions associated with the activity. These conditions should include: i) specific, measurable and time-bound targets, and ii) mechanisms for adaptive management using the results of periodic milestones to determine whether the biodiversity mitigation is on track and how to rectify if necessary, and	Table 2, pp. 22–24	Resource consent conditions XX-XX require adverse effects on the saltmarsh wetland to be minimised by locating the vehicle access track and hard stand area in a location where these activities will not affect the wetland.
G) establish roles and responsibilities for managing, governing, monitoring and enforcing the biodiversity mitigation, and		Resource consent conditions XX-XX hold the consent holder responsible for implementing the minimisation measures
H) undertake methods by which analysis will identify when milestones of the biodiversity mitigation are not achieved, and the causes of non-achievement, and how to revise the management plan to avoid similar occurrences.		N/A

Schedule G2:
Alignment with biodiversity offsetting principles

Schedule G2: **Principle 1** – Adherence to the effects management hierarchy

Wording	Guidance section	Explanation
The proposed biodiversity offset will be assessed in accordance with the effects management hierarchy set out in Policies P32, P39 and P39A. Any proposal for a biodiversity offset will demonstrate how it addresses the residual adverse effects of the activity.	Table 3, pp. 26–32	XXXX Airport Ltd owns a wider network of X.X ha of degraded saltmarsh wetlands embedded within exotic pasture and into which new wetlands could be expanded through wetland creation. In addition, the existing wetlands can be restored, and both the existing and new wetlands can be legally protected in perpetuity for conservation purposes. These positive effects to saltmarsh wetlands are close to the point of impact and relate to the same wetland class proposed to be reclaimed. The low-statured nature of the saltmarsh wetland vegetation means that native vegetation cover can be restored within 10 years from wetland creation/restoration. These possible positive effects provide an avenue to offset the residual biodiversity loss of the wetland impact resulting from the runway extension. The runway extension would result in reclamation and permanent loss of X.X ha of salt marsh wetland. An offset comprising X.X ha of saltmarsh wetland creation in existing grassland and restoration and legal protection of the entire X.X ha of existing and proposed salt marsh would result in a like-for-like biodiversity offset, within acceptable timeframes, near the point of impact, and with tangible additionality. Ten years after restoration has been completed, the proposed offset would result in a net gain for saltmarsh biodiversity.

Schedule G2: **Principle 2** – Limits to what can be offset

Wording	Guidance section	Explanation
Consideration of biodiversity offsetting is inappropriate where: A) there is no appropriate site, knowledge, proven methods, expertise or mechanism available to design and implement an adequate biodiversity offset, or	Table 3, pp. 26–32	The offset covers existing degraded saltmarsh wetlands which can be readily restored. As detailed in section XX of the AEE, new saltmarsh wetlands can be feasibly constructed, with sites and methods are available to give effect to the proposed offset.
B) when an activity is anticipated to cause residual adverse effects on an area after an offset has been implemented where: i) the ecosystem or species are "threatened" (as defined by the New Zealand Threat Classification System categories: Nationally Critical (NC), Nationally Endangered (NE), and Nationally Vulnerable (NV), or ii) the ecosystem is naturally uncommon.		The offset will result in a net biodiversity gain meaning there will be no residual adverse effects on the saltmarsh wetland.

Schedule G2: **Principle 3** – Additional conservation outcomes

Wording	Guidance section	Explanation
Any proposal for a biodiversity offset will demonstrate that the actions taken to achieve positive effects on biodiversity are additional to what would have occurred without the proposed biodiversity offset, including any activities required by any associated resource consent/s.	Table 3, pp. 26–32	The offset site has a history of grazing and has not been managed for ecosystem outcomes. The positive effects which are proposed by the offset would not have occurred anyway.

Schedule G2: **Principle 4** – Landscape context

Wording	Guidance section	Explanation
Any proposals for biodiversity offsetting will: C) demonstrate that positive effects are achieved preferentially, first at the site, then the relevant catchment, then within the ecological district, except where there is an appropriate ecological rationale for doing otherwise, and	Table 3, pp. 26–32	The positive effects are located close to the point of impact.
D) complement and contribute to the protection of significant indigenous vegetation, or the habitats of threatened fauna at the local, regional or national level, and		The degraded wetland area that is proposed for the restoration offset is a known site of ecological significance due to the ecosystem type and the species and habitats present. The offset helps to restore a degraded site of ecological significance.
E) take into account available information on the full range of biological, social and cultural values of biodiversity and support an ecosystem-scale approach, and		This assessment has taken into account all available information on the biological values of the site and supports an ecosystem-scale approach. Regarding cultural values, the local mana whenua have been consulted and have provided written approval for the project as a whole, including the proposed mitigation actions. Information on the social values of the site have been considered and are provided in section XXX of the AEE.
F) take into consideration other likely future developments, such as competing land use pressures, within the landscape.		The land is owned by the airport and due to its wetland nature and proximity to the airport it is not in demand for other forms of development.

Schedule G2: **Principle 5** – Long-term outcomes

Wording	Guidance section	Explanation
Any proposals for biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the activity's impacts, and preferably in perpetuity. The proposed biodiversity offset will: G) demonstrate that management arrangements, legal arrangements (e.g. covenants) and financial arrangements (e.g. bonds) are in place that allow the positive effects to endure as long as the residual adverse effects of the activity, and preferably in perpetuity, and	Table 3, pp. 26–32	The diversion channel has been designed to be permanent and provide freshwater habitat in perpetuity. It is at the edge of the quarrying operation in an area where quarrying has ceased. Following cessation of all quarrying activities on the property, which is estimated to occur between 2030 and 2035, the entire site will be rehabilitated as per conditions XX-XX of the quarry's existing land use consent (consent no. XXXXXXX). At this time, it is anticipated the diversion channel and associated riparian vegetation will be incorporated into the overall site rehabilitation landscape plan. The legal arrangements to ensure permanent protection of the diversion channel from future development is detailed in Section XX of the project's AEE.
H) be able to be implemented and enforced in line with any resource consent conditions associated with the activity. These conditions should include: i) specific, measurable and time-bound targets, and ii) mechanisms for adaptive management using the results of periodic milestones to determine whether the biodiversity offset is on track and how to rectify if necessary, and		The restoration offset will be enforced by resource consent conditions XX-XX.

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Schedule G2: Principle 5 continued...

C) establish roles and responsibilities for managing, governing, monitoring and enforcing the biodiversity offset, and	Table 3, pp. 26–32	The consent holder will be responsible for implementing the restoration offset in a manner that achieves the anticipated net gain outcome. The resource consent holder will be required, according to consent conditions XX-XX, engage professional engineers, ecologists, and other relevant professionals to design and implement the restoration offset.
D) undertake methods by which analysis will identify when milestones of the biodiversity offset are not achieved, and the causes of non-achievement, and how to revise the offset management plan to avoid similar occurrences.		A programme of wetland health monitoring will be specified in the offset management plant and implemented to identify when a net gain position has been achieved.

Schedule G2: **Principle 6** – No net biodiversity loss

Wording	Guidance section	Explanation
Any proposals for biodiversity offsets will provide measurable positive effects on biodiversity preferentially, first at the site, then the relevant catchment, then within the ecological district, which can reasonably be expected to result in no net loss and preferably a net gain of biodiversity. No net loss means no reasonably measurable overall reduction in: E) the diversity of indigenous species or recognised taxonomic units; and	Table 3, pp. 26–32	The positive effects resulting from the restoration offset will be generated near the point of impact. The positive effects will be demonstrated through monitoring to achieve a net gain position for biodiversity.
F) indigenous species' population sizes (taking into account natural fluctuations) and long term viability; and		Population sizes will be increased by the restoration offset.
G) the natural range inhabited by indigenous species; and		The natural range of indigenous species will not be affected.
H) the range and ecological health and functioning of assemblages of indigenous species, community types and ecosystems; and		The ecological health and functioning of the wetland network, and the species supported, will be measurably increased.
I) the cultural use values of indigenous habitats or species.		Restoration of the wetland network through the restoration offset will enhance the cultural values of the currently degraded saltmarsh wetland ecosystem.
Any proposals for biodiversity offset will demonstrate: J) that an explicit calculation of loss and gain has been undertaken as the basis for the biodiversity offset design, and should demonstrate the manner in which no net loss, and preferably net gain of biodiversity, can be achieved by the biodiversity offset, and		Section XX of the AEE details how a formal biodiversity offset calculator has been used to inform the scale of positive effects required to achieve a net gain position.
K) that the biodiversity offset design and implementation should include provisions for addressing sources of uncertainty and risk of failure in delivering the biodiversity offset, and		A programme of wetland monitoring is proposed to track the trajectory of biodiversity recovery in the restoration offset to ensure issues that any risks of failure are identified and can then be addressed.
L) that the offset is applied so that the ecological values being achieved through the offset are the same or similar to those being lost, and		The restoration offset is like-for-like in terms of location and wetland classification.

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Schedule G2: Principle 6 continued...

M) the intention to include and use a biodiversity offset management plan that: i) sets out baseline information on the indigenous biodiversity that is potentially impacted by the proposed activity at both donor and recipient sites, and ii) demonstrates how the requirements set out in this Schedule will be carried out, and iii) identifies the monitoring approach that will be used to demonstrate how the matters set out in this Schedule have been addressed over an appropriate timeframe.	Table 3, pp. 26–32	The biodiversity offset management plan will establish the biodiversity baseline of the degraded wetland and pasture areas planned for wetland construction. These measurements will provide a baseline against which to measure positive biodiversity effects achieved by the restoration offset. The same management plan will detail technical specifications for the restoration offset and the method of monitoring biodiversity gain over time. The plan will include adaptive management measures to be followed where biodiversity gain is less than expected at any stage of the restoration project.

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