Punakaiki Wild, West Coast

Ecological Effects Assessment

Report prepared for

ACG Properties Limited

Prepared by

RMA Ecology Ltd

Report number and date

2431

February 2025

BETTER ECOLOGICAL OUTCOMES

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Project No. 2431

Version date: 4 February 2025

Version status: Final

Citation:

RMA Ecology Ltd. February 2025. Punakaiki Wild, Te Miko, West Coast: ecological effects assessment. Report prepared for ACG Properties Ltd. 48 pages.

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1.0 Introduction

1.1 Background

This report provides an assessment of the ecological values of the property at 4663 State Highway 6, Te Miko, West Coast, legal description Part Section 1 Block IX Brighton SD, hereafter 'the site' (Figure 1), and an assessment of the ecological effects of a proposal to develop the site for luxury eco accommodation.

ACG Properties Ltd is applying for resource consents under the RMA 1991 to develop the site for luxury accommodation, consisting of a lodge, 15 smaller guest cabins, and staff accommodation. The development will also include associated accessways and pedestrian paths. This report identifies the ecological values present in the site, and assesses the level of actual and potential effects the proposed development may have on these values. The report makes recommendations to address these effects to ensure the overall level of ecological adverse effect is less than minor.

Figure 1. Site boundary as outlined in red. This is the investigation area that is the subject of this report.

1.2 Purpose and scope

Town Planning Group Ltd has engaged RMA Ecology Ltd on behalf of ACG Properties Ltd to undertake an assessment of the values of the site in terms of terrestrial and aquatic ecology to inform the design of the proposed development[1].

[1] This report has been prepared in accordance with our letter of engagement with Town Planning Group Ltd, dated 14 August 2024.

The approach includes survey and assessment of terrestrial and freshwater values and provides the following:

- Review of national databases to identify the likelihood of species of conservation significance being present, with an emphasis on native fish, lizards, birds, bats, and plants.
- Walkover survey to identify or validate the presence of:
    - Indigenous terrestrial vegetation, and assessment against the criteria for ecological significance as detailed in the West Coast Regional Policy Statement; and
    - Natural inland wetlands, as defined by the National Policy Statement for Freshwater Management; and
    - Watercourses, as defined by the West Coast Regional Council.
- Mapping of indigenous vegetation communities, natural inland wetlands, watercourses, and habitats suitable for native fauna.
- Survey for native lizards using the following methods:
    - Night arboreal spotlighting;
    - Visual search; and
    - Manual search.
- Survey for native fish using the following methods:
    - Spotlighting

This report contains the following:

- An overview of the methods used to assess the ecological values of the area potentially affected by the development;
- A description of ecological values within the development footprint and immediate surrounds;
- Discussion of the potential constraints that the ecological values may impose on the design of the proposed development, and recommendations for the management of these constraints;
- Assessment of the actual and potential adverse effects the proposed development will have the ecological values of the site; and
- The identification of opportunities for ecological enhancement and restoration, beyond those that may be required to manage residual adverse ecological effects.

The report has been prepared with regard to the ecological provisions of the Resource Management Act 1991 (RMA), the West Coast Regional Policy Statement (WCRPS), the National Policy Statement for Freshwater Management (NPS-FM), and the National Policy Statement for Indigenous Biodiversity (NPS-IB).

2.0 Methods

Desktop analysis and a site visit were undertaken to assess the ecological values of aquatic and terrestrial areas within and surrounding the development footprint, as well as the significance of those values. This section describes the methods used for desktop and field investigation locations.

2.1 Desktop assessment

A desktop assessment of the site development footprint and surrounding area was undertaken to identify areas that had potential for supporting ecological values. The following databases and documents were reviewed:

- Land Environments New Zealand (LENZ) and the Threatened Environment Classification (TEC)
- Historic aerial photographs (Retrolens)
- Drone imagery (supplied by client)
- WestMaps
- NIWA New Zealand Freshwater Fish database
- Department of Conservation National Amphibian and Reptile Database (Herpetofauna)
- Department of Conservation bat records database
- New Zealand Bird Atlas
- iNaturalist for records of native plant and animal species

The maps and aerial photographs (sourced from Google Earth, Retrolens, and recent drone imagery (provided by the client) were reviewed to identify existing vegetation, wetlands, and streams present on the site, and to establish an understanding of these features' ecological status. Preliminary mapping of streams, wetlands, and terrestrial vegetation was undertaken from aerial and drone photography to provide a basis for ground-truthing and for identifying focal investigation areas.

Data from national fauna reviewed to assess the likelihood of their presence on site, or nearby, and their threat status checked against the relevant national threatened species classification lists (Hitchmough *et al.* 2021, Robertson *et al.* 2021 and Dunn *et al.* 2017).

Site-specific surveys for bats and fish were not undertaken because the preliminary development footprint indicated that streams and forested areas were priorities to avoid for the development footprint; instead, assessments of habitat quality were recorded and the likelihood of species being present discussed as part of the assessment of potential values at the site.

2.2 Field assessment

A site visit was undertaken on 9 & 10 September 2024, to identify ecological values at the site. Surveys of terrestrial vegetation, the potential areas of wetland, and streams on the site were undertaken, as were assessments of fauna at the site, including potential fauna habitat. Areas of vegetation communities and terrestrial fauna habitat recorded were mapped using hand held GPS

(accurate to +/ - 5 m). Methods for assessing the ecological features present are described in the following sections.

2.3 Watercourses

All waterways and flow paths were assessed against the Resource Management Act (RMA) definition for a 'river'.

Under the RMA a river is defined as:

> *"a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal)"*

This is similar to the definition provided in the West Coast Regional Plan, which includes:

> *River means a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse; but does not include an artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal) or ephemeral water bodies. A storm flowpath that carries flow only for a short period after heavy rain is not considered to be a river.*

During the site walkover in September 2024, all streams at the site were assessed and mapped.

All waterways and flow paths were assessed as being either permanent, intermittent or ephemeral. Photographs were taken and a general description of the waterway was undertaken to note characteristics including riparian species and cover, and connectivity to other waterways.

2.4 Wetlands

Areas of potential wetland were assessed using the following methods:

1. Assessment according to the definition Resource Management Act 1991 (RMA):

   "Wetland: permanently or intermittently wet areas, shallow water, and land/water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions, including within the coastal marine area".

2. Areas that met the definition of a wetland under the RMA were then assessed according to the definition within the National Policy Statement for Freshwater Management 2020 (NPS-FM):

   > *Natural inland wetland means a wetland (as defined in the Act) that is not:*
   >
   > *a) in the coastal marine area; or*
   >
   > *b) a deliberately constructed wetland, other than a wetland constructed to offset impacts on, or to restore, an existing or former natural inland wetland; or*
   >
   > *c) a wetland that has developed in or around a deliberately constructed water body, since the construction of the water body; or*
   >
   > *d) a geothermal wetland; or*
   >
   > *e) a wetland that:*
   >
   > *i. is within an area of pasture used for grazing; and*

ii. *has vegetation cover comprising more than 50% exotic pasture species (as identified in the National List of Exotic Pasture Species using the Pasture Exclusion Assessment Methodology (see clause 1.8)); unless*

iii. *the wetland is a location of a habitat of a threatened species identified under clause 3.8 of this National Policy Statement, in which case the exclusion in (e) does not apply*

The NPS-FM technical support documents updated by MfE in January 2024 regarding wetland classification and delineation require that a step-wise assessment is undertaken based on vegetation, soils, and hydrology.

Exclusions are then applied based on factors that include the percentage abundance of pasture species, whether the wetland has developed in or around a deliberately constructed water body, an assessment of threatened species habitat use, and then application of three separate vegetation tests (Rapid Test, Dominance Test, and Prevalence Index). Wetland soils and hydrology information can be applied if the results of vegetation community and exotic pasture grass exclusion are inconclusive. Key for the identification of natural inland wetlands at this site is whether any wet areas have developed in or around a deliberately constructed water body, or are dominated by pasture grasses.

We understand that the National Environmental Standards for Freshwater 2020 (NES-F) and NPS-FM require Councils to ensure that the loss of values and extent of 'natural inland wetlands' is avoided in most instances (excluding some activities, including urban development). The NPS-FM and NES-F also restrict activities within a 10 m buffer around 'natural inland wetlands', and places controls on the level of potential adverse effects (from, for example, discharge of water or diversion of water) within 100 m from a 'natural inland wetland'.

A site assessment is required to accurately classify and delineate any potential wetlands identified through desktop mapping. During the site walkover in September 2024, all wetlands at the site were assessed and mapped.

A summary flow-chart of the methodology applied for the identification of wetlands at this site is set out in Appendix A.

2.4.1 Fish

The NIWA New Zealand Freshwater Fish Database was reviewed to determine the species of freshwater fish that inhabit stream systems near the site.

A spotlight survey was undertaken at the site on the night of 9 September 2024 to assess the likelihood of native freshwater fish being present in streams on site.

2.5 Terrestrial ecology

Vegetation was assessed across the site with a focus on indigenous species. Vegetation communities were recorded and mapped, along with habitats assessed as suitable for indigenous fauna, particularly lizards, birds, and bats.

Vegetation communities were assessed against the criteria for significance in the West Coast Regional Policy Statement and the National Policy Statement for Indigenous Biodiversity.

The NPS-IB requires that any significant adverse effects on indigenous biodiversity outside of Significant Natural Areas (SNA) (Clause 3.16) must be managed by applying the effects management hierarchy (Avoid, Minimise, Remedy, Offset, Compensate).

2.5.1 Lizards

During the site walkover survey, habitat assessed as being suitable for native lizards was recorded and mapped. Suitable habitat was visually searched for lizards and lizard sign.

Manual searches of these suitable habitat areas were also undertaken – which involved turning over logs, rocks and undertaking opportunistic searching though leaf litter packs and looking carefully for basking lizards in sunlit spots amongst dense vegetation.

A night spotlight survey for arboreal lizard species was undertaken on 9 September 2024. Night spotlighting targets habitat suitable for arboreal geckos with the aid of high-powered head mounted spotlights and binoculars used at 10 x 40 magnification while slowly and systematically visually searching tree foliage. Dense foliage of native kanuka-manuka scrub and other tight-leaved native vegetation on the site provide suitable refugia for geckos.

2.5.2 Birds

Incidental bird observations identified visually and audibly at the site during the site visit, including native and introduced species were recorded. Potential food sources and nesting habitat were noted for the purpose of estimating the potential loss of resources associated with the planned development.

2.5.3 Bats

The existence of any potential bat roosting and foraging habitat was noted and mapped during the site visit.

3.0 Results

3.1 Ecological context

The site is approximately 21.86 ha and is located along the coastline at Perpendicular Point above karst cliffs that bound the Tasman Sea and west of Paparoa National Park. A mapped sea cave is located at the south western corner of the site. Mature coastal forest spans the southern boundary of the site. State Highway 6 is adjacent to the site and provides access.

The original natural ecology has been heavily modified or removed through vegetation clearance. Historic aerial photographs indicate that the land has been cleared of the majority of its native vegetation since at least the 1950s, for farming activities (Figure 2). As a result, exotic grassland dominates parts of the site, and gorse has established in many areas (and has recently been controlled). Some portions of the site that are not grazed are slowly regenerating into native coastal forest, particularly in areas adjacent to established forest on neighbouring Department of Conservation (DOC) reserve to the south (Plate 1).

The site is located within the Punakaiki Ecological District and is a 'Paparoa Character Area'. The original vegetation of the Ecological District comprised of hardwood forest with few podocarps inland from the coast. The coastline had a vegetation community that comprised of high diversity broadleaved forest species and northern rata. The Punakaiki Ecological District has remained largely unmodified throughout, with the coastline of the district succumbing to the highest degree of modification.

The Threatened Environments Classification (*Walker et al*. 2015) shows how much native (indigenous) vegetation remains within land environments, and how past vegetation loss and legal protection are distributed across New Zealand's landscape. The site lies within the Threatened Environment class categorised as having 30 % of indigenous cover left and 20 % of that cover legally protected from clearance. In these environments, the indigenous vegetation cover is still vulnerable to threats such as weeds, pests, logging, and other extractive land uses.

Land Environments of New Zealand (LENZ) is a quantitatively-based classification of New Zealand's terrestrial environment developed by Landcare Research[2], which has resulted in a number of datasets including the Land Cover Database (LCDB).

LCDB v5.0 provides an indication of current land use, and land use change since its inception in 1996. The LCDB shows that the site has been used as 'high producing exotic grassland', 'indigenous forest', and 'broadleaved indigenous hardwoods' since at least 1996.

[2] https://www.landcareresearch.co.nz/tools-and-resources/mapping/lenz/

Figure 2. Historic aerial photograph depicting the vegetation cover from 1988 across the site, with the DOC forested land to the south (right of the lighter green grazed pasture on the site). Sourced from Retrolens.

Plate 1. Aerial photograph depicting the current vegetation cover across the site as of July 2024, with the existing farm access track that was recently resurfaced / maintained (white line) that bisects the site through its length from the main highway.

3.2 Watercourses

There are no recorded streams on the site on NZ Topo Maps or WestMaps. The NIWA River Environment Classification (REC) database shows one REC segment on the site, REC 12055730, which has been mapped as Stream 1. Three additional intermittent streams have been mapped after reviews of drone imagery, vegetation changes, and topography at the site, together with ground truthing during the site visit (Figure 3).

Drone video was reviewed and recorded running water discharging over the cliffs at the northern boundary of the site into the Tasman Sea. Four streams and their tributaries were mapped on site (Figure 3). The discharge point of all four potential streams on site is the Tasman Sea.

The site was inundated with water at the time of the visit and all streams had flowing water. Steep cliffs, dense vegetation, and slippery rock made many areas of the site inaccessible during the site walkover. Aerial imagery, drone footage, and observations from the site visit were used to accurately classify and map the streams across the site.

All streams at the site are in good condition with a mix of good quality instream habitat and riparian cover. The Figure 3 below shows the approximate location of the streams.

3.2.1 Stream 1

Stream 1 is a permanent stream which flows beneath dense regenerating mixed shrubland vegetation from the DOC Scenic Reserve on the southern boundary of the site and discharges to the sea at the western boundary of the site.

Stream 1 is largely in its original condition apart from a culvert at the intersection of an accessway towards the western extent.

The stream flows through the understory of the dense regenerating mixed native and exotic shrub and is well shaded throughout. The stream supports habitat for fish and aquatic invertebrates through various sized rocks and cobbles, woody debris, and undercut banks. The stream contains meanders, pools, riffles and runs.

The dense riparian vegetation made the are difficult to navigate on foot at the time of the site visit. Due to this it is likely not all small tributaries of Stream 1 have been recorded on Figure 3. The dense vegetation also made it difficult to ascertain the presence of fish barriers across the extent of the stream, although the tall cliff at the seaward end is undoubtedly a significant barrier to fish colonisation of this stream, irrespective of internal barriers within the stream.

The stream is in good ecological condition, with an array of hydrological heterogeneity, instream refugia from organic debris, and dense riparian vegetation cover.

3.2.2 Stream 2

Stream 2 is an intermittent stream located at the base of a moderate depression in the landform. The stream discharge point to the sea is over the edge of the cliffs at the northern boundary of the site, which is a barrier to fish migration.

The stream is unmodified with a natural channel and form, and it margins are well vegetated with flaxes, grasses, and small shrubs, which provide good shading of the stream channel. Aquatic invertebrate communities are expected to be of high quality.

The stream is in good ecological condition, although it is very unlikely that there are any native freshwater fish inhabiting this stream.

3.2.3 Stream 3

Stream 3 is a permanent watercourse that enters the site from the east and flows north west across the site and discharges over the cliffs at the northern boundary of the site, which is a barrier to fish migration.

The stream is moderately vegetated with a mix of exotic grasses, native and exotic shrub/scrub, and regenerating coastal forest. Gorse control across the site has resulted in small sections of the stream banks bare/or with limited riparian vegetation cover, until underlying grasses and other shrubs species regenerate (which we expect will naturally happen quite quickly).

The stream is in good ecological condition, with an array of hydrological heterogeneity, instream refugia from organic debris, and dense riparian vegetation cover. Aquatic invertebrate communities are expected to be of high quality; however, it is unlikely freshwater fish are present in the stream due to the stream discharging over the cliff and being a barrier to fish migration.

3.2.4 Stream 4

Stream 4 is located beneath the mature coastal forest, and mature exotic trees. The stream discharges over the cliff into the sea.

Due to the steep topography and wet conditions at the time of the site visit this area was not searched on foot to accurately map the extent of the stream. The vegetated margins of the stream indicate that the stream is likely to also be in a natural state, and that instream habitat is likely to be of high quality given the lack of apparent modification of the stream reach.

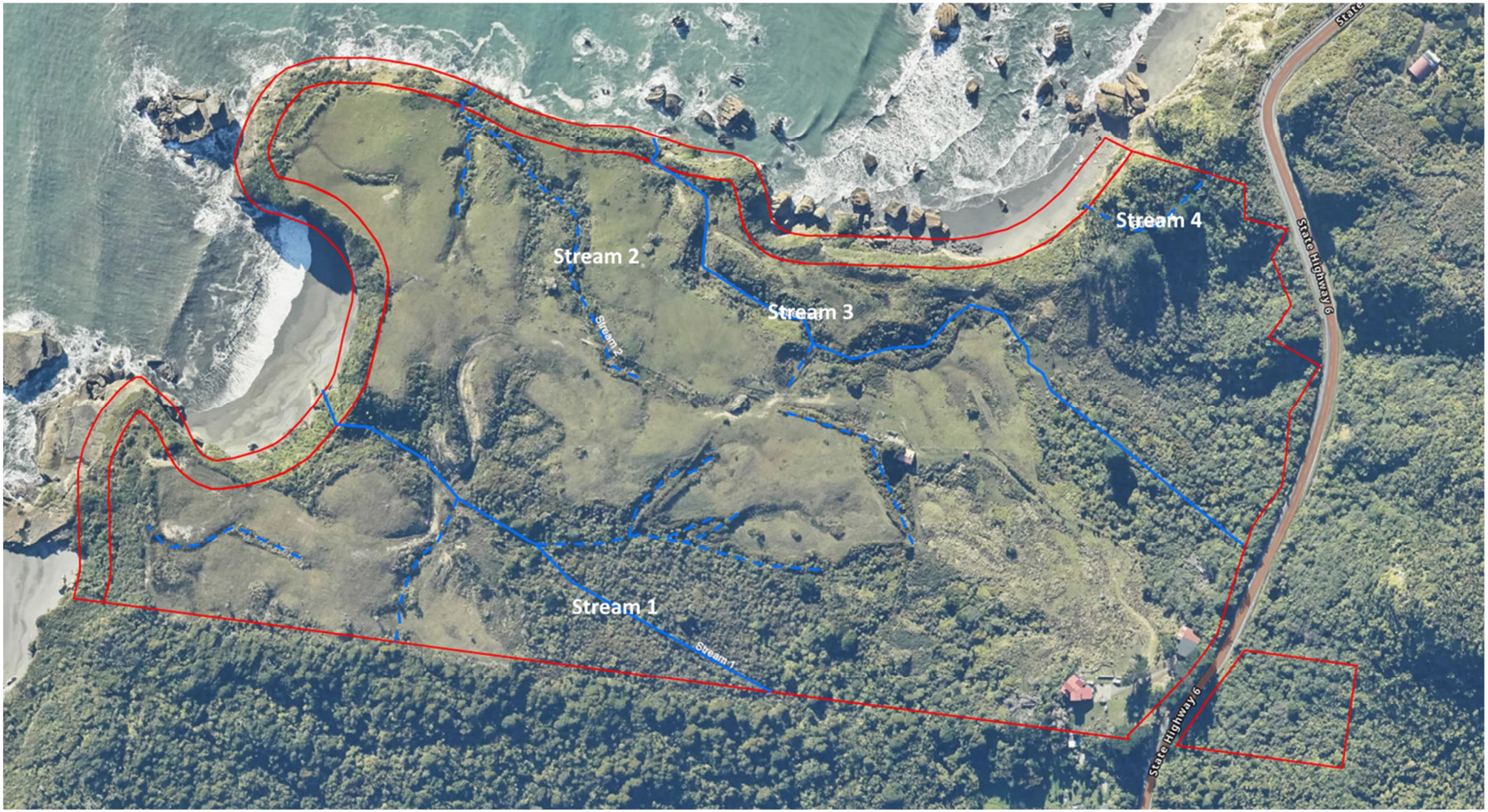

Figure 3. Mapped streams at the site and their approximate extents. Permanent watercourses are shown as solid blue lines, intermittent watercourses are shown as dashed blue lines. Site boundary is outlined in red.

3.3 Fish

No native fish species were observed during the night spotlight of the streams on site. Rain during the survey and heavy rainfall in the week prior to the survey resulted in fast flowing and turbid water, which made spotlighting for fish difficult.

Fish survey through trapping and eDNA methods were not undertaken at the site due to the limited impact this development proposes to have on streams.

There are no records of freshwater fish from the site. NIWA New Zealand Freshwater Fish Database (NZFFD) records from the nearest watercourses, Bullock Creek, Pororari River, and Punakaiki River were reviewed to create a list of species most likely to be present in the area wider area.

Bullock creek is 1.5 km south of the site, Pororari River is 2.2km south of the site, and Punakaiki River is 4.3 km south of the site. Records of two freshwater species were found for Bullock creek. Pororari River provided no records of freshwater fish species. Ten species are recorded as being present in Punakaiki River.

It is likely that only koura is present in the streams on site. It is unlikely that other fish species are present due to the streams discharging from the site at height into the sea which poses a barrier to the movement of fish into streams on the site.

The native fish species records held by NZFFD are summarised in Table 1, with the most recent record of the species displayed. Most of these species require unobstructed access to other waterbodies or the sea in order to colonise and sustain populations. The cliff bound streams at the site most probably pose insurmountable barriers to most, if not all, of the species listed in Table 1.

Table 1. NIWA New Zealand Freshwater Fish Database (NZFFD) records for Bullock Creek, and Punakaiki River.

Species	Common name	Waterbody name	Status	Date of record
Paranephrops	Koura	Bullock Creek	Not Threatened	1987
Anguilla dieffenbachii	Longfin eel	Bullock Creek	At Risk – Declining	1987
Rhombosolea retiaria	Black flounder	Punakaiki River	Not Threatened	1987
Gobiomorphus hubbsi	Bluegill bully	Punakaiki River	At Risk – Declining	1987
Gobiomorphus cotidianus	Common bully	Punakaiki River	Not Threatened	1987
Gobiomorphus gobioides	Giant bully	Punakaiki River	Naturally Uncommon	1878
Galaxias maculatus	Inanga	Punakaiki River	At Risk – Declining	1987
Anguilla dieffenbachii	Longfin eel	Punakaiki River	At Risk – Declining	1987
Gobiomorphus huttoni	Redfin bully	Punakaiki River	Not Threatened	1987
Anguilla australis	Shortfin eel	Punakaiki River	Not Threatened	1963
Cheimarrichthys fosterae	Torrentfish	Punakaiki River	At Risk – Declining	2012

3.4 Wetlands

There are six natural inland wetlands on the site, covering a total area of 2,650 m^2 (Figure 4).

The six wetlands were delineated using the methods described in the Wetland Delineation Protocol (MfE, 2022). Wetland vegetation plots were taken to determine the extent of the wetland boundary. Soil cores were unable to be taken due to the saturation of the ground at the time of the site visit. Soils were fluid and the core was unable to be extracted intact.

The primary indicators of the presence of wetlands include characteristic vegetation colours and patterns or signs of water pooling in depressions in the landscape. Although less common, wetlands can also exist on flat or sloping land where there is seepage from groundwater, or overland flow paths. Land contour was also assessed to determine whether a hydrological connection exists between the parts of the site proposed for development and potential wetlands.

The wetlands at the site have all historically been grazed for a prolonged period of time and currently support wet-adapted vegetation. The wetlands are pugged and degraded and are in the process of recovering now that stock have been removed from the site.

All six wetlands on site met the Dominance Test for hydrophytic vegetation and were saturated underfoot, indicating that water regularly pools at the surface creating conditions suitable for wetland development. All wetlands at the site are characterised by short stature vegetation.

- W1 is a wetland approx. 863 m^2 in area, dominated by herbaceous native vegetation species; *Juncus lomatophyllus*, *Isolepis prolifera, Carex secta*, and *Cyperus ustulatus*. The wetland is bordered by gorse, exotic pasture grasses and bare ground (from recent gorse clearance). The wetland has limited shading across its extent.
- W2 is a wetland approx. 224 m^2 in area. The wetland is dominated by native *Isolepis prolifera* and *Cyperus ustulatus.* The wetland has a buffer that consists of only pasture grass and recently cleared gorse.
- W3 is a wetland approx. 534 m^2 in area and is dominated by native *Juncus lomatophyllus, Isolepis prolifera,* and *Juncus sarophorus.* All vegetation surrounding the wetland has recently been cleared of gorse.
- W4 is a wetland approx. 352 m^2 in area and is dominated by native *Juncus sarophorus, Juncus bufonius,* and *Juncus lomatophyllus.*
- W5 is a wetland approx. 111 m^2 in area and is located at the bottom of a gully. The wetland is dominated by *Juncus lomatophyllus*, *Isolepis prolifera,* and *Carex secta.*
- W6 is a wetland approx. 566 m^2 in area and is located within the depression in the landform. The wetland is dominated by harakeke (*Phorium tenax*) and herbaceous vegetation species; *Juncus lomatophyllus*, *Isolepis prolifera, Carex secta*, *Cyperus ustulatus*, and *Juncus sarophorus.*

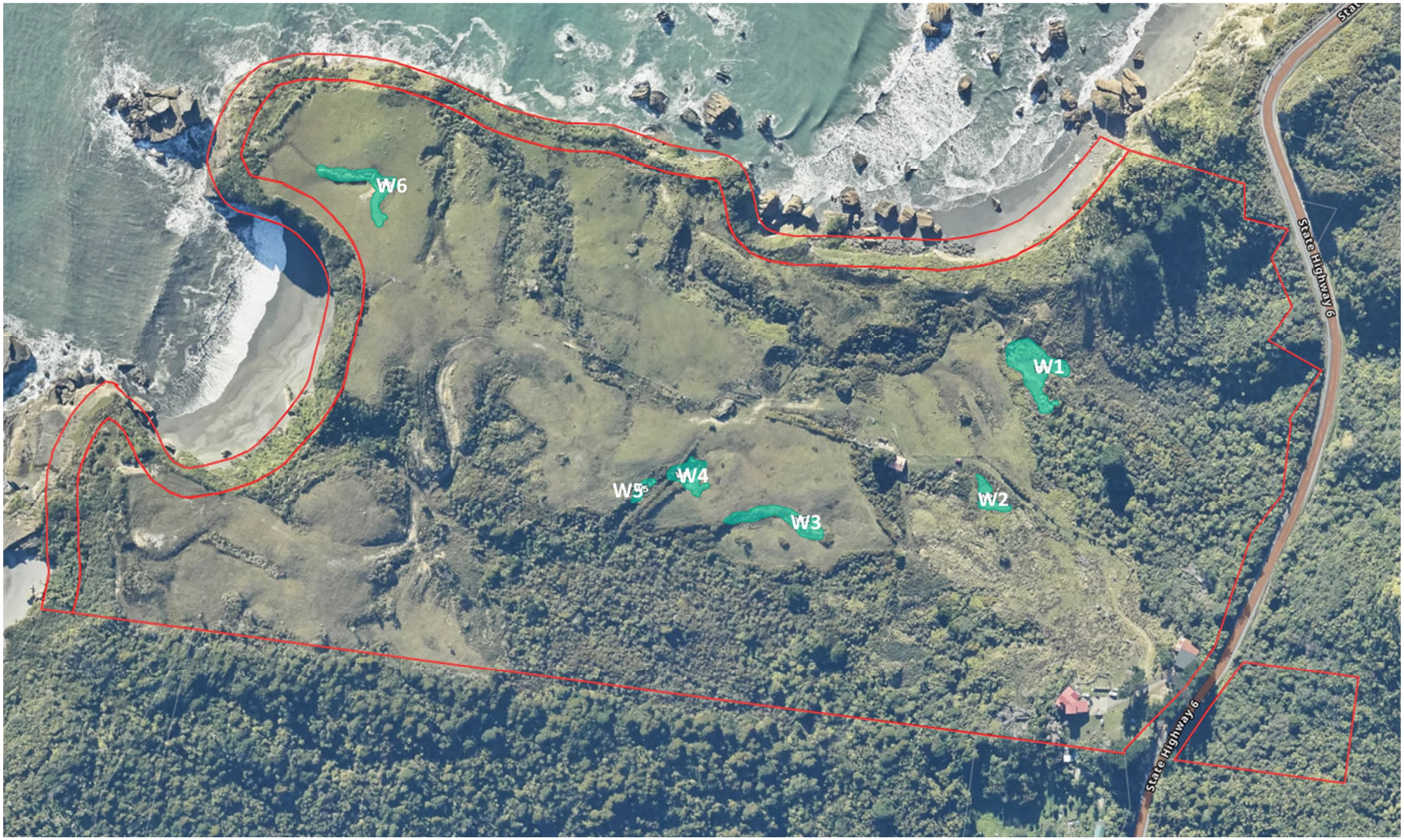

Figure 4. Six wetlands mapped across the site are labelled W1 – W6 and are identified as cyan polygons. The site boundary is shown in red.

The wetlands are perched over hard underlying impervious rock (iron pans or similar) with the combination of location in the landform and underlying soils providing poor drainage and retaining water. The wetlands are degraded as a result of past and current land uses, and have only low ecological value in their current state. Despite the degraded condition, the value of the wetlands is enhanced by its rarity as a habitat, as a result of the significant overall loss (90 %) of wetlands across the region and New Zealand. In addition, the wetlands at the site will continue to provide ecosystem services such as stormwater attenuation and filtering.

3.5 Terrestrial vegetation

Land use at the site has primarily been open pasture grass, most likely for farming purposes, for many decades after indigenous vegetation cover was cleared prior to the 1950s. Some areas of the site are currently largely regenerating in mixed native and exotic species, with some areas covered densely with gorse as the site has not been maintained as pasture grassland. The gorse which was encompassing many of the open areas on site has been the subject of recent control and clearance. Desktop analysis of aerial imagery, drone footage and databases has determined there are a range of terrestrial vegetation communities on the site (Figure 5), including:

- Native dominated forest – coastal species not cleared when the majority of site was cleared pre-1950s. Dominated by mature nikau (*Rhopalostylis sapida*);
- Regenerating mixed native and exotic shrubland. Dominated by mahoe (*Melicytus ramiflorus*), cabbage tree (*Cordyline australis*), harakeke (*Phormium tenax*), kamahi (*Pterophylla racemosa*);
- Exotic grassland and bare ground;
- Exotic weedland/scrub – primarily gorse (*Ulex europaeus*);
- Mature exotic forest – primarily macrocarpa pines;
- Native shrubland – low growing species that are growing along the exposed cliff faces in the north and west boundaries of the site. Primarily harakeke;
- Mixed scrub – native and exotic species growing together, often on the edges of exotic weedland and regenerating shrubland; and
- Saline grasses – on flat rock surfaces of the cliff edges where the salt water from wave action splashes onto and collects.

There is a diverse suite of species that make up the vegetation types on site. No rare plant species were detected at the site. An assessment of the significance of the vegetation and habitats on the site within the proposed vegetation clearance and earthworks/ construction footprint under the RPS significance criteria is presented in Table 2.

3.5.1 NPS-IB significance assessment

The operative Buller District Plan does not identify the site as a Significant Natural Area (SNA), however it does identify the site as a Paparoa Character Area. The process of identifying SNAs on private land in the West Coast region is relatively recent and therefore the vegetation and habitats at the site which could be impacted by the proposed development were assessed against the ecological significance criteria in Appendix 1 of the West Coast RPS (Table 2).

Our preliminary assessment below indicates that the native vegetation units on the site could qualify as significant indigenous vegetation, which means that any development proposal should aim to minimise or avoid clearance of these vegetation types. Qualification as 'significant' in an ecological sense does not confer SNA status on a site, so the provisions of the NSP-IB relating to SNA sites do not apply to this site.

Continuous habitats at the site comprising forest and scrub areas have been assessed as a whole, regardless of the individual vegetation types. Areas of exotic grassland and exotic scrub are not ecologically significant and have not been combined or considered with the continuous habitats.

Table 2. Assessment of the site against the RPS Ecological Significance criteria.

Criterion (factor)	Assessment	Conclusion
Representativeness	Most of the vegetation on this site is mixed exotic and indigenous plant species. The parts that are dominated by native vegetation comprise the cliff edges, the mature forest, and parts of the regenerating scrub/shrub. Vegetation community present is not a typical example of a West Coast region indigenous ecosystem, as native vegetation within it is less dense and younger than vegetation that is commonly seen across the coastline of the region. LENZ/ TEC classifies the site as a regional example where 20-30 % indigenous cover is left, and therefore does not comprise a Threatened ecosystem.	The proposed development aims to avoid impacts on native regenerating vegetation. The vegetation does not meet this criterion for significance.
Rarity of ecosystems or species	The site does offer habitat for At-Risk bird fernbird. The site has habitat that could potentially support At Risk listed native lizards.	The site provides habitat for At Risk species and does meet this criterion
Diversity and pattern; natural diversity within the area	The vegetation on the site supports a sub-set of native plant species that are expected in a natural regenerating shrubland site. The overall diversity of native plants across the site compared with those expected in the wider region indicates that this site is representative of the natural diversity of the region.	The vegetation community does not meet this criterion for significance
Ecological context, connectivity, buffering and core habitat	The area which contains regenerating shrub/forest provides some ecological connectivity and buffering to neighbouring expansive forests. The mature coastal forest and the indigenous vegetation that borders the cliffs provides habitat for native birds.	The vegetation does meet this criterion for significance.

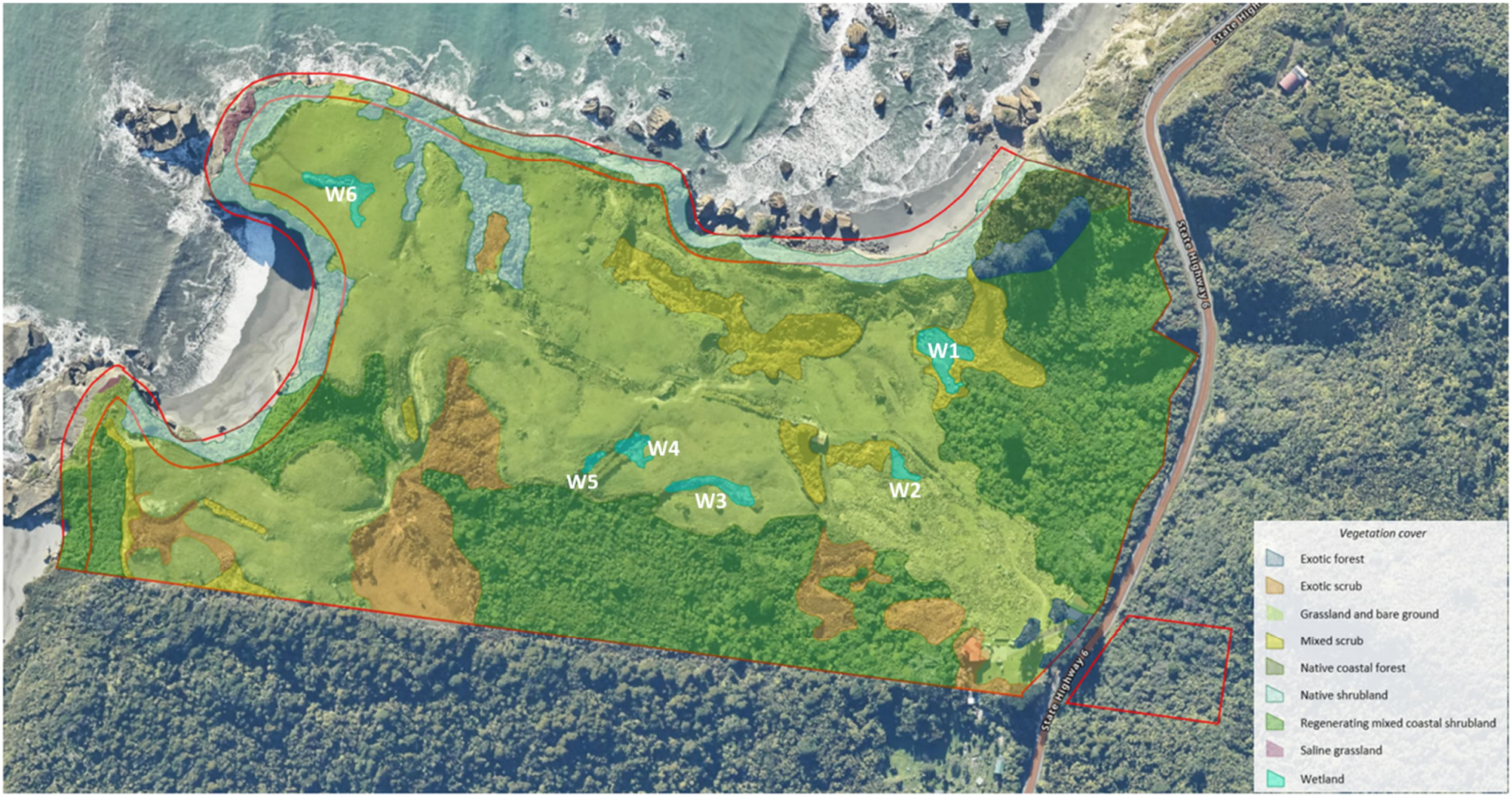

Figure 5. Vegetation communities on the site.

3.6 Lizards

Habitat quality for native lizard species varies across the site for the species that could potentially be present. The site has been historically extensively cleared of indigenous vegetation. Lizards could be present on the site if populations have persisted through habitat loss by surviving in small remnant habitats that remain at the site. It is also possible that populations on neighbouring properties have moved into the site by recolonising the regenerating vegetation that has formed on the site.

Vegetation communities and habitat types on the site that offer habitat for native lizards include:

- Native and exotic regenerating scrub/forest;
- Mature native coastal forest;
- Native shrubland;
- Exotic weedy scrubland;
- Farm debris;
- Exposed limestone cliff faces; and
- Rank grassland.

There are no records of native lizards from the site. Records from the DOC herpetofauna database show that the native lizards most likely to be encountered at the site are Newman's speckled skink (*Oligosoma newmani,* recorded 4 km from site), forest gecko (*Mokopirirakau granulatus,* recorded 800 m from site), and West Coast green gecko (*Naultinus tuberculatus,* recorded 4 km from site. The native lizards that are known to occupy the wider region and their likelihood of being present at the site based on distribution and habitat preference are summarised in Table 3.

Records for the wider West Coast area in the DOC database are minimal; however, this could be due to lack of observations rather than lack of lizards present. As such, the region is under surveyed and as a result information on lizard species populations and distributions is sparse.

During the site visit, habitats suitable for native skinks, including areas of long grass, shrubs, and garden debris piles, were manually searched for lizards or signs of their presence i.e. scat or skin slough.

Native vegetation with dense foliage, suitable for geckos was visually searched for gecko and sign of gecko during the day.

Similar appropriate vegetation was also spotlighted in the evening for arboreal geckos.

There is suitable habitat for native lizards on the site, however no lizards or sign of lizard was detected at the time of the site visit. The weather at time of the site visits was mild, with mostly rainy and overcast conditions; the conditions were not ideal for native lizards to be active.

For most of the lizards recorded locally, the site does not support adequate or appropriate habitat. The site has been modified so much over the past several decades that the likelihood of lizards being present is low or nil.

Table 3: Native lizards known to inhabit the wider region around the site and the likelihood of the species being present at the site based on records and available habitat. Source: New Zealand Herpetological Society Website.

Species	Common Name	Threat Classification	Preferred Habitat Type	Likelihood of presence
Mokopirirakau granulatus	Forest gecko	At Risk - Declining	Arboreal and terrestrial. Occupy a range of habitats such as swamps, scrubland, mature forests, rock fields, and scrubby regenerating habitats.	Low
Naultinus tuberculatus	West Coast green gecko	Threatened – Nationally Vulnerable	Primarily arboreal. Occupy forested habitats, swamps, scrubland, low scrub, regenerating scrubby habitats, and mature forests.	Low
Oligosoma newmani	Newman's speckled skink	At Risk - Declining	Occupy wide range of habitats; pebble banks, dense vegetation in coastal areas, grassland, rock piles, open areas in forest and scrub. Will climb onto low vegetation or debris to bask, retreat quickly when approached. Take refuge under rocks, logs, dense vegetation, and leaf litter.	Low
Oligosoma polychroma	Northern grass skink	Not Threatened	Wide range of habitats, including gardens, coastal vegetation, rock piles, grassland, flaxes, shrubland, scree, forest margins, tussocks, and modified suburban areas.	Low
Oligosoma zelandicum	Glossy brown skink	At Risk - Declining	Coastal areas, pebble banks, grassland, wetland, scrubland, forest, and prefer to inhabit areas with dense ground cover.	Nil
Oligosoma albornense	Alborn skink	Threatened – Nationally Critical	Tolerant of damp habitat. Occur in beech forest clearings, regenerating scrub, and wetlands. Take refuge under logs and anthropogenic debris.	Nil

3.7 Birds

An avifauna desktop investigation was undertaken to compile a list of bird species possibly present or possibly frequent at the site. Data from the ornithological society of New Zealand Bird Atlas was collated from the 10 x 10 km grid square (CH38) which encompassed the project area. The data available for this grid square provided a list of 56 species of birds (both native and exotic species).

The habitats available for birds at this site limit the likelihood of many of the 56 species recorded in the database being present on the site. Habitat for native birds at the site includes native forest, exotic scrub, grassland, cliff faces, and native shrubland, vegetated cliff margins. Some species recorded are also likely only occasional visitors to the site.

Table 4 provides a summary of the Threatened and At-Risk bird species that have been recorded within 10 km of the site, many of these species are unlikely to be encountered at the site due to habitat requirements.

Birds recorded from the site included a typical rural mix of common native species (fantail, silvereye, bellbird, pukeko and tui) and exotic species (blackbird, thrush).

The only species of conservation interest found at the site was fernbird.

During the site visit two fernbirds (*Poodytes punctatus*) were recorded as incidental observations near wetland W3. Playback was then used to determine if there were other fernbirds nearby. Both individuals were observed in umbrella sedge (*Cyperus ustulatus*) in the wetland. Fernbird are classified as At Risk – Declining and are vulnerable to loss of habitat. They prefer to inhabit low wetland vegetation which makes them easily predated by introduced predators.

The cliffs at the northern and western boundaries and the understory of accessible areas of regenerating shrubland of the site were searched for any burrows that would indicate the presence of Westland petrels (*Procellaria westlandica;* At Risk*)*) utilising and nesting at the site. No burrows were located.

The Westland petrel maintains breeding colonies in the forest-covered foothills between Barrytown to the south and Punakaiki, with breeding colonies scattered over an 8 km area south of the Punakaiki River. Although the known breeding colonies are 5 k m to the south of the Punakaiki Wild, Te Miko, site, there is a risk that indiscriminate artificial lighting could result in young birds becoming negatively affected and being grounded (where they are vulnerable to introduced predators or injury). A study by NZTA in 202o, whereby it turned off street lights in Punakaiki between November and January when young Westland petrels leave their burrows and take their first flight found that significantly fewer petrels crash-landed around the village.

The potential for this development to have unintended adverse effects on Westland petrel is acknowledged, and a specific lighting plan has been developed in order to minimise artificial light spill and to minimise the risk of the development having adverse effects on fledging petrels.

Table 4. At Risk and Threatened birds recorded near the site; sourced from the NZ bird Atlas. Shaded rows indicate species detected at the site or which may be present. Lack of appropriate habitat and difficulty of access to the site via cliffs means that most species cannot access or have no suitable habitat at the site.

Scientific name	Common name	Threat Status (Robertson *et al.* 2016)
Urodynamis taitensis	Long-tailed cuckoo	Threatened – nationally vulnerable
Phalacrocorax punctatus	Spotted Shag	Threatened – nationally vulnerable
Anas superciliosa	Grey duck	Threatened – nationally vulnerable
Hydroprogne caspia	Caspian Tern	Threatened – nationally vulnerable
Apteryx haastii	Great Spotted Kiwi	Threatened – nationally vulnerable
Anthus novaeseelandiae	New Zealand Pipit	At Risk - Naturally Uncommon
Procellaria westlandica	Westland Petrel	At Risk - Naturally Uncommon
Phalacrocorax carbo	Black shag	At Risk - Relict
Microcarbo melanoleucos	Little shag	At Risk - Relict
Cyanoramphus auriceps	Yellow-crowned Parakeet	At Risk - Declining
Poodytes punctatus	New Zealand Fernbird	At Risk - Declining
Chroicocephalus bulleri	Black-billed Gull	At Risk - Declining
Eudyptula mino	Little Penguin	At Risk - Declining
Ardenna bulleri	Buller's Shearwater	At Risk - Declining
Chroicocephalus novaehollandiae	Red-billed Gull	At Risk - Declining
Sterna striata	White-fronted Tern	At Risk - Declining
Anarhynchus bicinctus	Banded dotterel	At Risk - Declining
Petroica australis	South Island Robin	At Risk - Declining
Haematopus finschi	South Island Oystercatcher	At Risk - Declining

Scientific name	Common name	Threat Status (Robertson *et al.* 2016)
Haematopus unicolor	Variable Oystercatcher	At Risk - Recovering
Falco novaeseelandiae	New Zealand Falcon	At Risk - Recovering
Phalacrocorax varius	Pied shag	At Risk - Recovering

3.8 Bats

There are two species of native bats that remain in New Zealand; long-tailed bat/ pekapeka (*Chalinolobus tuberculatus*), which is currently classified 'Threatened – Nationally Critical' (O'Donnell *et al.*, 2022), and the lesser short-tailed bat/ pekepeka-tou-poto (*Mystacina tuberculata*). There are three subspecies of the lesser short-tailed bat: the subspecies relevant to this area is the southern lesser short-tailed bat which is classified as 'At Risk – Recovering' (O'Donnell *et al.*, 2022).

The national bat database held by DOC records the closest detection of lesser short-tailed bats within approx. 3 km of the site in 1997 and 1998 (Figure 6). These bat detections occurred in the lower reaches of Bullock Creek and Pororari River. Surveys for lesser short-tailed bats were conducted in similar locations along the river reaches as the 1997 and 1998 records in 2000, 2018, and 2020 which all yielded no detection of bat activity. The nearest detection of long-tailed bats to the site is from 1998 approx. 28 km from site in the Rough River catchment. One recent record of long-tailed bat from 2017 is approx. 33 km from site in the Stony River catchment.

Aerial imagery was of the site was reviewed to identify habitat features that are commonly used by bats. Bats require large trees (including standing dead trees) with cavities (e.g. deep knot holes), epiphytes, or loose bark for roosting. They typically use linear landscape features such as bush edges, gullies, water courses, and roadways to transit between roosting and feeding sites (Borkin and Parsons, 2009). Bat activity is influenced by overnight weather conditions such as temperature, rainfall, humidity, wind speed, and moonlight.

There is low – moderate quality bat habitat at the site in the mature exotic trees and the mature coastal forest. Individual trees were too dangerous to access at the time of the site visit to assess if they contain good bat habitat features. Aerial imagery shows that the trees are tightly compacted and windswept, with no linear pattern.

Although there are historic bat records in close proximity to the site, it is unlikely that bats occur on the site or transit through the site due to lack of viable habitat for roosting, foraging, or transiting through the site.

Figure 6. Historic records from 1997 and 1998 of lesser short-tailed bats (orange dots) in relation to the project site (red rectangle).

3.9 Summary of ecological values

The site, of approximately 21.86 ha in area, has been historically cleared of indigenous forest cover over most of the site since at least the 1950s. A small remnant of coastal forest has remained in the north eastern corner of the site and areas of the site are regenerating in mixed native and exotic shrubland (mainly native species establishing through older gorse cover).

The following ecological features have been recorded:

- Four streams have been mapped on site (some of which have side-branches), comprising two permanent streams; Stream 1 and Stream 3, and two intermittent streams; Stream 2 and Stream 4 – all of which are in excellent condition with good quality habitat and good quality riparian cover.
- No native fish species were detected at the site. Native fish may be present in Stream 1; however, it is likely that only koura are present in streams due to the barriers limiting fish migration and movement to other waterbodies.
- Six natural inland wetlands, W1 – W6, are present on the site. Most are perched over an impervious ground layer (pan) with underlying soils providing poor drainage. Some are gully wetlands associated with historic farming and stream margins. All are comprised of low stature vegetation. All wetlands have been grazed historically for a long time, and although impacted will recover quickly.
- The site supports indigenous vegetation across the site. No 'At Risk' or 'Threatened' plant species were found during the site visit. Most vegetation on the site is exotic pasture and pasture weeds including extensive gorse areas, most of which have been recently controlled or cleared. Mixed gorse/ native shrubland, native shrubland regenerating coastal

forest cover approximately half of the site, and form an excellent basis for ecological enhancement.

- No lizards were detected; however, parts of the site contain habitat for grass skink (open vegetated area) and West Coast green gecko (taller shrubland and forest). In the absence of a detailed survey, it is assumed that native lizards of one of these species may be present within the shrubland and rough grassland areas, although the history of site clearance and grazing makes it likely that, even if present, lizards will be in low numbers.
- Two fernbirds were observed on the southern part of the site near W3 in low stature wetland vegetation.
- No Westland petrel burrows were detected on the site- in particular within scrub and the small area of mature exotic-native forest on the site. The proximity of the site to Punakaiki as a known area flown over by young fledging Westland petrels means that proactive limitations on the use of artificial lighting should be applied to this site.
- The site is very unlikely to support native bats. The aerial imagery of the site indicates low quality bat habitat and that the site is unlikely to be used by bats for roosting, foraging, or transiting.

4.0 Development proposal

The proposed development is for the establishment of a luxury lodge and visitor accommodation, along with associated access, parking, lodge support building, and staff accommodation (Figure 7).

The lodge will contain a restaurant, bar, and spa facility. The development aims to complement the surrounding landscape and become a tourist attraction.

Access to facilities will be provided by a main access road off the State Highway – this is the existing farm road which will be improved with a topping layer of gravel. Accessways for foot traffic to cabins will also be created (width up to 2.8 m wide). Two walkways (up to 1.4 m wide) will be constructed, with one linking cabins SC2 and SC 3 on the northern edge of the site, and the other linking the proposed Lodge with a coastal track to the west and south to the main carparking area.

Artificial lighting proposed for the site will follow good practice guidelines for the minimisation of light spill and seek to avoid adverse effects on native wildlife, in particular penguins and Westland petrels (fledging birds especially). An External Lighting Management Plan will be prepared that takes into account minimisation of light spill that may affect wildlife through the use of downward facing shielded lights, motion sensors, and amber LEDs across the site to minimise attractance to wildlife.

Following the ecological survey on 9 and 10 September 2024, which identified six natural inland wetlands, the preliminary development plans were modified by the Applicant to avoid works within any wetlands and a 10 m setback from the wetland – including for roading, cabins and other structures, pathways, and associated infrastructure and support works.

All existing vegetation will be removed from the footprint of the development, and the site earth-worked to create appropriately graded ground for construction. The earthwork footprint has been carefully designed in order to avoid works within native shrubland, forest, or wetlands. The two proposed walkways through the northern and western parts of the site will avoid wetland areas and minimise the removal of regenerating native shrubland; any vegetation clearance during walkway formation will preferentially be through gorse weedland areas.

The natural inland wetlands W1 – W6, along with a 10 m setback from the wetland edge, are outside of the earthworks and construction area. The proposed development is downstream of the catchment for wetlands W1 – W5 and the accessway from the state highway to the lodge will remain in its current position, meaning that there is no risk that the site works will intercept catchment flow that may lead to diversion or dewatering of wetlands. Wetland W6 will have an accessway installed to the east (outside) of the 10 m wetland setback, and will similarly not affect that wetland.

Earthworks and construction will take place outside of Streams 1 – 4, and outside of a 5 m setback from each stream.

Two culverts are currently present at the site and will be retained for access to accommodation cabins at site. One of those existing culverts will be retained in the current state over stream 1 (Figure 7). The second culvert is damaged and will be removed and replaced with a new culvert in a different location on Stream 3. The culverts over these two streams will be designed in accordance with good practice fish passage design requirements to allow for passage of native fish as a precautionary measure (as no fish were detected in streams and natural barriers to migration or

colonisation may mean that fish are naturally absent from these streams). The culverts will be designed according to the specifications detailed in Clause 70 of the National Environmental Standards for Freshwater (NES-F), to allow for fish passage. Two further culverts will be installed within ephemeral watercourses to allow for trial access; however, we understand that because these watercourses are ephemeral (i.e. not streams), there are no requirements to allow for fish passage (as there is no fish habitat or aquatic habitat in these watercourses).

Plans for the management of stormwater arising from the development are being development now, and will involve the careful, buffered discharge of stormwater into the drainage ditches (not streams) across the site, with appropriate scourge protection installed. The proposal seeks to minimise the extent of non-permeable surfaces through the site to allow stormwater to continue to discharge into the ground and along existing overland flow paths.

Good practice erosion and sediment controls will be implemented for the duration of the earthworks.

Details of the earthwork extents, volumes and cut/fill on site, as well as the generic controls that will be put in place are laid out in the Assessment of Environmental Effects report. For the purposes of this assessment, we assume that good practice controls will be put in place and that the risk of sediment mobilisation and discharge to wetlands and watercourses is a low risk.

Figure 7. Plan of proposed development at the site. Wetlands are labelled W1-W6. Streams 1-3 are also shown (Stream 4 not shown as it is outside of the development area).

5.0 Actual and potential adverse effects on ecology values

Actual and potential adverse effects on the ecological values of the site are summarised in the table below (Table 5).

A description of the construction methods, magnitude of potential ecological loss, and overall level of effects is provided in Section 6.0 along with proposals for the management of these effects following the Effects Management Hierarchy[3].

5.1 Wetland

The footprint of the proposed development lies outside of the six wetlands at the site and beyond a 10 m setback from the wetlands. The earthworks footprint is also outside of the wetlands and beyond a 10 m setback from the wetlands.

Stormwater arising from the site during and after construction will not be discharged into wetlands. Further details regarding the management of stormwater are to be provided for a later application to West Coast Regional Council.

There will be no direct adverse effects on wetlands. The level of effect on Wetland W6 will be negligible and temporary, and related only to works in the buffer of the wetland (not the wetland itself).

Overall, the level of potential ecological effect on wetlands will be nil.

5.2 Streams

The footprint of the proposed development lies outside of all streams at the site and beyond a 5 m setback from the streams, along both banks, with the exception of:

- Construction/upgrade of existing culvert over Stream 3 for the access to two guest cabins. The culvert constructed will comply with the permitted allowances for culverts in terms of length of watercourse bed disturbance.
- The culvert that currently exists and allows vehicle access over Stream 1 will be retained in its current state with no changes required.

Stormwater arising from the development (roads, buildings) will be discharged into the streams. The discharge system seeks to utilise the existing drainage channels across the site, with appropriate design solutions to avoid scouring. This is currently under design.

As the streams on site are largely being avoided by the proposed development at the site, the level of adverse effect of the development works is assessed to be low.

The level of adverse effect of the construction of culverts on Stream 3 is assessed to be low, as this will be upgrading an old farm culvert in an area with low riparian vegetation cover.

[3] *Managing adverse effects on indigenous biodiversity in the Wellington Region: A guide to implementing the effects management hierarchy in the Natural Resources Plan*. Wellington Regional Council. May 2022.

5.3 Fish

Native fish and kōura have not been recorded in any streams at the site/ or their upstream catchments. The proposed construction of culvert crossing in Stream 3 is unlikely to cause harm or death to native fish during the construction process due to a large fish migration barrier in Stream 3 restricting the possibility of native fish inhabiting the stream; however, it is conceivable that koura and native fish (if present in the streams) could be within the very small footprint of this culvert upgrade.

For the culvert upgrade at Stream 3, the culvert works will be undertaken in the dry where possible and appropriate sediment controls put in place to prevent uncontrolled discharge of sediment further downstream. Bed materials will be carefully excavated and material spread over the adjoining bank. Any native fish, eels or koura will be returned to the stream, downstream from the works area.

The two new culverts proposed within the Stream 1 catchment will both be within ephemeral watercourses (not stream sections).

The level of potential adverse effect on native fish and kōura, and their passage through the streams, is assessed to be low, as the length of stream works is a very small portion of the overall length of Stream 3. The loss of fish and kōura habitat is assessed as having a low level of adverse effect, and should be temporary given the culvert will be embedded as per the NES-F requirements for culvert installation, which will mean that the culvert invert is below bed level and the culvert will fill with natural stream bed gravels and ultimately provide habitat for koura and fish (if any).

5.4 Terrestrial vegetation

The proposed development will result in the clearance of open paddock vegetation, and exotic weedland and scrub. The two short lengths of walkway proposed to link parts of the northern and western areas of the site (see Figure 7 will be routed through mainly gorse areas, with a minimal amount of low regenerating native shrubland that will be removed 9estiamted to be less than 50 m^2.

There is no terrestrial vegetation on the site within the proposed clearance areas that meets the definition of significant indigenous vegetation.

The level of adverse effect of the clearance of this small area of predominantly exotic vegetation is assessed as nil.

5.5 Lizards

Areas of potential lizard habitat will be cleared for the proposed development at the site in the form of rank grassland (95 %) and exotic weedland and scrub (less than 5 % of the total clearance area). The areas proposed for clearance are low quality lizard habitat and have a low likelihood of native lizards being present.

No lizards were detected on site at the time of the site visit; however, it is possible that native lizards are occupying the site.

The proposed vegetation clearance is assessed as having a low adverse effect on native lizards through habitat removal and the potential to cause native lizards harm or death is assessed as low during the vegetation removal process.

Most of the vegetation clearance at the site is narrow and linear in order to form accessways and walkways; clearance to create pads for cabins and the main dwelling are also small areas. Almost all of this vegetation removal is within exotic pasture and low weedy vegetation (most of which has been recently cleared of gorse). There is no – or very limited – clearance of exotic and mixed low shrubland (up to est. 50 m^2 for accessways) that may support arboreal geckos.

Prior to the removal of grassland and rank weedy vegetation from the site, grassland within the clearance footprint will be mown progressively to a shorter and shorter height, with the ultimate aim of creating a very short vegetation sward that cannot support lizards (if any are present). From similar projects elsewhere it is known that mowing progressively lower results in habitat that lizards will move out from and not inhabit. Excavation to remove short vegetation immediately following mowing will ensure that ground-dwelling skinks on the site (if any) are not in harm's way and will not be impacted.

Prior to the removal of the very small areas of shrubland (total area ca. 50 m^2), the shrubland will be hand cut and taken to an adjoining area of shrubland and left there for a minimum of 2 weeks (or preferably left there permanently). Hand cutting (not mulching) will ensure that any geckos within the shrubland (if any) will be unharmed. Depositing cut shrubs into existing nearby shrubland will ensure that any geckos can leave cut shrubs and establish within similar quality nearby habitat.

5.6 Birds

Only a small area of exotic vegetation – almost all of which is exotic grassland - will be cleared for the development at the site. The clearance of this vegetation will not result in the permanent loss of small areas of roosting, nesting and foraging habitat for native bird species at the site. The proposed development at the site will avoid the removal or modification of indigenous vegetation or habitats of native fauna on the site.

No earthworks, roads, or buildings will be placed through the area where fernbird were observed.

All native birds and their nests are protected under the Wildlife Act 1953.

The proposed vegetation clearance is assessed as having a very low adverse effect on any native birds that may be nesting at the time of the clearance, and a very low adverse effect on the loss of roosting, nesting, and foraging habitat.

Table 5. Summary of actual and potential adverse effects of the proposed development on the ecological values of the site.

Ecology value	Development impact	Potential adverse effect
Streams and wetlands	Discharge of stormwater into streams and wetlands	Potential effect: Inputs of sediment and pollutants; erosion of stream and wetland bed and/ banks at point of discharge. *To be assessed fully for the consent application to West Coast Regional Council.*
Native fauna	Construction of culvert on Streams 3	Potential effect: Damage to, or death of kōura (and fish, if any are present) during the construction process
		Potential effect: Loss of fish passage on Stream 3
		Actual effect: Loss of small area of stream bed and bank habitat
Native birds	Vegetation clearance	Potential effect: Damage to, or death of, native birds/ eggs/ nestlings.
	Artificial lighting	Potential effect: Disorientation of fledging Westland petrel/ injury/ mortality from crash-landings
Native lizards	Vegetation clearance	Actual effect: Permanent loss of habitat for native ground dwelling lizard species.
		Potential effect: Damage to, or death of, native lizards

6.0 Management of adverse effects

A number of actual and potential adverse effects on the ecological values of the site have been identified. These have been analysed following the EIANZ methods[4] to determine the magnitude and overall level of the effects. Table 6 summarises the results of the EIANZ effects matrix analysis. Mitigation proposals follow the Effects Management Hierarchy of mitigation (avoid, minimise, remedy), biodiversity offset, and biodiversity compensation.

The values considered in the significance assessment are those that are indigenous in nature, or which provide habitat and resources to support indigenous species.

In relation to the Table 6 scoring:

- Stream 3 has been scored as having excellent condition as it is only slightly modified from stock access during past land uses causing pugged stream banks. Most of the length of the stream channel has riparian vegetation cover, and hydrological variation, and is unlikely to support native fish and aquatic invertebrates, although has ample habitat to support them.

- The value of native fish and kōura has been scored low, to reflect the unlikely presence of native freshwater fish or koura bring present in the portion of Stream 3 that will be affected by the culvert works.

[4] As contained within the EIANZ EciA guidelines (Roper-Lindsay *et al* 2018.)

Table 6. Assessment of significance of ecological effects using the EIANZ matrix method.

Factor	Value of resource[a]	Magnitude of effect[b]	Level of effect[c] (without mitigation)	Mitigation that will be applied	Level of effect[c] (after mitigation)
Streams – culvert upgrade to allow vehicle crossing of Stream 3 – sediment mobilisation and discharge to watercourse affecting instream habitat and water quality	High	Moderate	High	Avoid Implementation of best practice erosion and sediment controls Remedy Planting the 5 m setback on both banks of Stream 3 with native species, to improve sediment filtering capacity, and enhance the ecological value of the streams.	Negligible
Damage to, or death of, native fish or kōura during construction of culvert in Stream 3.	Low	Low	Very Low	Avoid Undertake stream bed works in the dry. For any bed excavation, spread material on stream bank and return koura and fish to stream.	Negligible
Loss of fish passage in Stream 3 construction of culverts.	Low	Low	Very Low	Avoid Construction of culvert will be in accordance with NES-F Clause 70 design criteria so that there is no impediment to fish passage through the culvert.	Nil

Factor	Value of resource[a]	Magnitude of effect[b]	Level of effect[c] (without mitigation)	Mitigation that will be applied	Level of effect[c] (after mitigation)
Loss of small area (ca. 10 m stream length) of fish and kōura habitat (area of the culvert) following construction of culvert.	Low	Low	Very Low	Mitigate Install culvert to be embedded 25 % of diameter into stream bed, so that natural bed materials coat inner culvert, restoring habitat Riparian planting of a 5 m buffer along both banks of Streams to improve stormwater and pollution filtering, increase shading, and become a source of woody debris (habitat).	Net Gain
Damage to, or death of, native birds/ eggs/ nestlings during vegetation clearance	Low	Low	Very Low	Avoid Carry out vegetation clearance of potential nesting bird habitat outside of the bird breeding season	Nil
Loss of native bird habitat	Low	Low	Low	Mitigate Riparian planting of minimum average 5 m buffers along both banks of Streams 1 and 3 will create new foraging, refuge, and nesting habitat for native birds.	Net-gain

Factor	Value of resource[a]	Magnitude of effect[b]	Level of effect[c] (without mitigation)	Mitigation that will be applied	Level of effect[c] (after mitigation)
Injury or death to fledging Westland petrel	High	Moderate	High	Avoid and mitigate Artificial lighting plan limits lighting to essential areas, avoid using up lights/ use downward facing shielded lights, all road and accessway lighting on motion sensors. Utilise amber LEDs across the site to minimise attractance to wildlife An External Lighting Management Plan will be prepared that takes into account minimisation of light spill that may affect wildlife, including Westland petrel	Negligible
Loss of native lizard habitat	Low	Low	Very Low	Mitigate Creation of lizard habitat through extensive planned native planting and native shrubland/ forest regeneration programme	Net-gain
Damage to, or death of, native lizards during vegetation clearance	Moderate	Low	Low	Avoid Mow grassland areas to reduce habitat prior to earthworks. For shrub clearance, hand cut shrubs and place within existing shrubland areas for any geckos to naturally disperse.	Nil

[a] *EIANZ matrix tables 5 and 6.*

[b] *EIANZ matrix table 8; measured in the context of the catchment (streams) or District (terrestrial values).*

[c] *EIANZ matrix table10.*

6.1 Streams

The level of potential adverse effect of the culvert upgrade works on Stream 3 is assessed as moderate. To reduce the level of effect to negligible, good practice erosion and sediment controls should be implemented. The applicant's planner has advised that best practice erosion and sediment controls will be implemented for the duration of the earthworks. Further details regarding ESC will be provided as part of a later consent application to West Coast Regional Council.

In addition, we recommend that the effect of culvert works is mitigated by ensuring that the culvert is installed in accordance with the design criteria in the NES-F, which will result in embedment and provision of fish and koura habitat through the culvert. Further, potential effects can be remedied through the planting of a buffer of native species within the 5 m setback on both banks of Stream 3. A buffer of dense, quick-growing native sedges and grasses, plus woody shrubs and trees, will help filter sediment and pollutants from stormwater, benefitting the health of the stream and its downstream catchment.

A planted native buffer will have the added value of enhancing the ecological value of Stream 3 by providing habitat for native birds, shade over the streams (important for fish and aquatic invertebrates), and in time, a source of woody debris to create in-stream habitat for fish and aquatic invertebrates.

Provided these mitigation measures are implemented, the adverse effects of the proposed development on Stream 3 are considered to be nil.

6.2 Fish

The construction of a culvert on Stream 3 has the potential to result in the damage to, or death of, native fish or kōura, and the loss of fish passage, as well as the actual loss of a small area of bank and stream bed habitat.

In order to avoid potential adverse effects on fish and/ or kōura, stream works will be undertaken in the dry, or if the stream is not dry, be material will be carefully excavated and spread on the margin of the stream, with any koura and native fish returned to the stream by hand.

In order to avoid the loss of passage for fish through the culverts, the culverts should be designed following the specifications detailed in Clause 70 of the National Environmental Standards for Freshwater (NES-F):

Culverts

70 Permitted activities

(1) The placement, use, alteration, extension, or reconstruction of a culvert in, on, over, or under the bed of any river or connected area is a permitted activity if it complies with the conditions.

Conditions

(2) The conditions are that—

(a) the culvert must provide for the same passage of fish upstream and downstream as would exist without the culvert, except as required to carry out the works to place, alter, extend, or reconstruct the culvert; and

(b) the culvert must be laid parallel to the slope of the bed of the river or connected area; and

(c) the mean cross-sectional water velocity in the culvert must be no greater than that in all immediately adjoining river reaches; and

(d) the culvert's width where it intersects with the bed of the river or connected area (**s**) and the width of the bed at that location (**w**), both measured in metres, must compare as follows:

(i) where $w \leq 3$, $s \geq 1.3 \times w$:

(ii) where $w > 3$, $s \geq (1.2 \times w) + 0.6$; and

(e) the culvert must be open-bottomed or its invert must be placed so that at least 25% of the culvert's diameter is below the level of the bed; and

(f) the bed substrate must be present over the full length of the culvert and stable at the flow rate at or below which the water flows for 80% of the time; and

(g) the culvert provides for continuity of geomorphic processes (such as the movement of sediment and debris).

Information requirements

(3) *See also* regulations 62 and 63 for information requirements that apply to the permitted activity (unless the activity is use).

Alternative designs to allow for fish passage, particularly if the size of the culvert required cannot meet the specifications in 2 (d) and (e), must include the installation of flexible baffles (Plate 2), that alter the flow of water through the culvert and provide rest areas for fish.

Plate 2: Multiple *Flexi-Baffles* are placed in a culvert to alter the flow while providing rest areas for species travelling upstream. (Source: https://www.ats-environmental.com/solutions/culvert-baffles/)

The loss of fish and aquatic invertebrate habitat along the length of the culvert will be remedied by the planting of native species along the 5 m setback on both banks of Stream 3. Planting the riparian margin

will, in time, provide shade over the channel, and a source of organic debris into the channel, providing foraging and refuge habitat for fish and native invertebrates.

Implementation of these mitigation measures will reduce the adverse effect on native fish and kōura to a negligible level.

Planting the 5 m setback along both banks of Stream 3 will increase the ecological value of the stream compared to the current state, and will result in a net gain for biodiversity.

6.3 Birds

The clearance of existing vegetation on the site will result in the loss of a small area of low-quality foraging, roosting, and nesting habitat that is currently used by low numbers of common native bird species. This adverse effect will be remedied through the planting of native species in the 5 m setback along both banks of Stream 3. More broadly, the extensive replanting programme proposed by the Applicant separate to the effects assessment process will ensure that many times greater nesting habitat is provided to native birds across the site.

The potential for damage to, or death of, birds or their eggs/ nestlings should be avoided by carrying out vegetation clearance outside of the bird breeding season.

Implementation of these mitigation measures will reduce the adverse effect on native birds to a negligible level. With the broader planting programme in place, the overall effect will be a net-benefit.

The potential for adverse effects from artificial lighting on birds (especially penguins and Westland petrels) will be minimised by adopting good practice lighting design that includes downward-facing LEDs, motion detectors, and timer-operated lighting, the overall design of which will be provided in an External Lighting Management Plan. With wildlife-sensitive lighting in place, the potential for adverse effects on wildlife form lighting is considered to ne negligible.

6.4 Lizards

The clearance of existing vegetation on the site that constitutes lizard habitat with result in the loss of a small area of native lizard habitat. This adverse effect will be remedied through the planting of native species at the site, with woody debris being retained on site and left to decay.

The potential for damage to, or death of, native lizards will be avoided by mowing grassland areas to reduce habitat prior to earthworks. For the small area of shrubland clearance, shrubs will be hand cut and placed within existing shrubland areas for any geckos to naturally disperse.

Implementation of these mitigation measures will reduce the adverse effect on native lizards to a negligible level.

7.0 Residual adverse effects and conditions

The potential effects of the proposed development on ecology values include effects on vegetation, lizards, birds, streams and wetlands; however the scale of disturbance is very small, and the likelihood of serious ecological damage to the environment is very low.

Controls that will be in place during the construction process avoid most potential adverse effects by avoiding works within wetlands or their margins, limiting works within streams to one culvert crossing, avoiding clearance of indigenous shrubland and forest, and limiting overall vegetation clearance to exotic grassland and a small area of exotic shrubland. By applying the recommended mitigation measures listed in the sections above of this report, the overall adverse effect of the proposed development on the ecological values of the site will be reduced to a negligible level.

Native planting along the 5 m setback margins of Stream 3 will result in a net gain for biodiversity. There will be, therefore, no residual adverse effects that are more than minor, and there will be no requirements for any biodiversity offsetting or ecological compensation measures.

The small scale of habitat clearance, and the adherence to good practice earthworks controls and culvert installation means that scale of potential adverse effects is further reduced.

Given the small scale of potential effects on ecology values, we recommend that management plans are not required to further describe guarantees around site management, but rather that consent conditions be applied to provide assurance of good practice to minimise ecological effects.

Consent conditions will be proposed by the Applicant that include:

1. Stream 3 culvert installation in accordance with Clause 70 of the NES-F;
2. Vegetation clearance protocols that include:
    a. Clearance in general accordance with the development footprint design provided in the landscape drawing prepared by RMM Ltd;
    b. Clearance of grassland areas by progressive mowing to reduce the grass sward to a lot (100 mm) height prior to excavation;
    c. Clearance of shrubland outside of the native bird nesting season (October through to February);
    d. Clearance of shrubland using hand tools to cut shrubs, and relocation of cut shrubs to adjoining shrubland area for a minimum duration to 2 weeks prior to mulching, or leave cut shrubs at the relocation site indefinitely;
3. No vegetation clearance works within the location recorded for fernbird, plus a 20 m buffer around those noted locations.
4. Enrichment planting along Stream 3 to provide a contiguous, woody vegetation margin that is at least on average 5 m wide on each margin.

8.0 Ecological restoration

The Applicant intends undertaking substantial ecological restoration work across the site as part of the development (Figure 8).

Those works are described in the Assessment of Environmental Effects report and include weed control across the entire property, planting of buffers to streams and wetlands, and active and passive regeneration of native shrublands and forest areas across the broader property in areas set back form the coastal edge. The list of native plant species that is proposed to be planted is included as part of the Graphic Attachment to the RMM Landscape Assessment Report, and has included input form us with regard to appropriate locally-sourced plant species to include in the various planting and amenity zones across the site.

The plantings will provide substantial future benefits to bird habitat (including fernbird) and native lizards (including skinks and geckos), and will improve the resilience of the neighbouring DOC forested land by providing a substantial ecological buffer, add to the extent of contiguous native shrubland and forest in the local area, and better protect soils, watersheds, and water quality across the site.

The ecological restoration works will be described in a Vegetation Management Plan for the site, which we understand will form one of the proffered conditions of consent.

However, it is important to note that the substantial planting and weed control works being proposed do not form part of the effects management package, as the adverse effects of this development are small, and will be managed through the series of mitigations described in Sections 6 and 7 of this report.

Therefore, most of the initiatives that are described in the Vegetation Management Plan are additional to the actions being proposed to manage actual or potential adverse effects that may arise from the development, and should be considered as actions that contribute towards a substantial net-benefit for ecology – across both aquatic and terrestrial values - for this site.

Figure 8. Plan of the proposed vegetation units following completion of the project. This shows substantial areas currently in pasture ann weedland that will be revegetated or assisted back to native dominated shrubland and native forest.

9.0 Conclusion and recommendations

The proposal to develop luxury eco accommodation at 4663 State Highway 6, Te Miko, West Coast will include works to create vehicle access tracks, accommodation cabins, pathways, and a main lodge facility.

Construction of the project will require clearance of mainly exotic grassland, with a small area (up to 50 m^2) of exotic shrubland and culverting of one stream (Stream 3).

The ecology values that could be potentially affected at the site include:

- Loss of potential habitat and injury to individuals of native skinks and geckos - although the habitat is poor quality and no lizards are recorded from the site; and
- Disturbance and loss of stream habitat over a small reach (up to 10 m) for the installation of a culvert in Stream 3.

Adverse effects that will be avoided through the design of the project include:

- Avoidance of any works within wetlands or within 10 m of wetlands;
- Avoidance of infilling of streams;
- Avoidance of clearance of native shrubland and forest; and
- Avoidance of works within the known areas of fernbird recorded from the site

Controls that will be put in place during the development of the site will reduce the level of impact to indigenous vegetation and habitats of native fauna to a nil or negligible scale.

These include:

- Erosion and sediment controls for works in Stream 3;
- Installation of the Stream 3 culvert in accordance with the NES-F Clause 70 design criteria to enable passage for native fish, and the ensure that stream bed loss is temporary and limited;
- Minimising the clearance of regenerating mixed exotic-native shrubland to very small areas for the creation of walkways (up to 50 m^2);
- Shrub clearance outside of the native bird nesting season, and relocation of cut shrubs to avoid effects on any geckos present;
- Lighting plan to minimise the generation of artificial light spill, with particular consideration of avoiding adverse effects on penguins and Westland petrel;
- Grassland cleared by mowing to reduce habitat for ground-dwelling skinks and to avoid impacts prior to earthworks; and
- Enrichment planting of Stream 3 along its length to a width of 5 m to provide a continuous woody riparian margin.

By applying the recommended mitigation measures, the overall adverse effect of the proposed development on the ecological values of the site will be reduced to a negligible level.

Native planting along the 5 m setbacks of Stream 3 will result in a net gain for biodiversity. There will be, therefore, no residual adverse effects that are more than minor, and there will be no requirements for any biodiversity offsetting or ecological compensation measures.

Given the small scale of potential effects on ecology values, we recommend consent conditions be applied to provide assurance of good practice to minimise ecological effects.

Consent conditions have been proposed by the Applicant that include:

1. Stream 3 culvert installation in accordance with Clause 70 of the NES-F;
2. Vegetation clearance protocols that include:
    a. Clearance in general accordance with the development footprint design provided in the landscape drawing prepared by RMM;
    b. Clearance of grassland areas by progressive mowing to reduce the grass sward to a lot (100 mm) height prior to excavation;
    c. Clearance of shrubland outside of the native bird nesting season (October through to February);
    d. Clearance of shrubland using hand tools to cut shrubs, and relocation of cut shrubs to adjoining shrubland area for a minimum duration to 2 weeks prior to mulching, or leave cut shrubs at the relocating site indefinitely;
3. No vegetation clearance works within the location recorded for fernbird, plus a 20 m buffer around those noted locations.
4. Enrichment planting along Stream 3 to provide a contiguous, woody vegetation margin that is at least on average 5 m wide on each margin.
5. An External Lighting Management Plan to minimise light spill.

10.0 References

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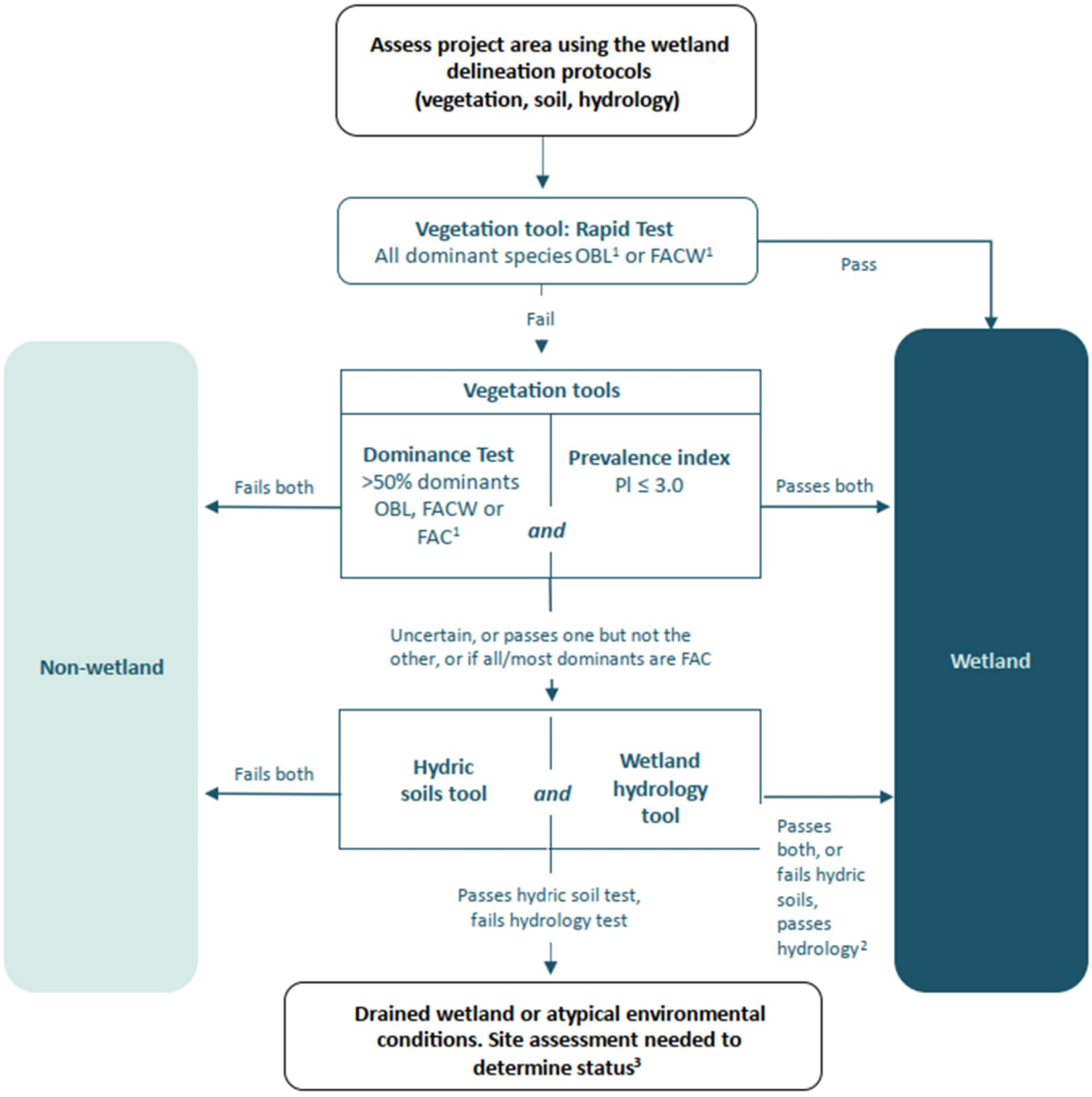
Appendix A: Wetland Delineation Protocols (MfE, 2022)

Figure 3: Determining if an area is a wetland as defined by the RMA 1991



Footnotes:
[1] Wetland indicator status abbreviations: FAC = facultative, FACW = facultative wetland, OBL = obligate wetland.
[2] For example, recent wetland.
[3] The US procedures for atypical or problematic situations are recommended.