



Co-creating a thriving ecosystem

Ocean Ridge Private Plan Change

Ecological Impact Assessment

Final

Prepared for Cargill Station Limited



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Executive Summary

Morphum Environmental Ltd (Morphum) understand that Cargill Station Limited are intending to lodge a private plan change request with Kaikōura District Council. Morphum has been engaged by Cargill Station Limited to provide an Ecological Impact Assessment to inform the proposed private plan change.

The plan change seeks to (among other things):

- Increase the overall residential yield within the Ocean Ridge Development Area from 336 units (in the operative plan) up to 486 units (an increase of 150),
- Alter areas currently dedicated to open space/grazing to a combination of residential and large lot/lifestyle housing areas,
- Increase the total area dedicated to the Mixed-Use Area; and,
- Amend the Native Planting Restoration Management Plan.

The purpose of this report is to detail the ecological values of the site, the ecological effects of the proposed private plan change, and provide recommendations for addressing any adverse ecological effects.

The assessment below follows the Environmental Institute of Australia and New Zealand's Ecological Impact Assessment Guidelines (EclAG) (EIANZ, 2018). The EclAG utilises a standard framework and matrix approach providing a consistent and transparent assessment of effects. However, to future proof the assessment of current ecological values for future resource consent applications, the Environment Canterbury Regional Policy Statement Significance Criteria have also been utilised.

The ecological values across the site have been assessed as ranging from Negligible to High. With Moderate ecological value being assigned to the riparian edge vegetation, coastal broadleaf vegetation, and wetland habitats. A High ecological value has been assigned to herpetofauna due to the low-moderate possibility of Waiharakeke grass skink (*Oligosoma aff. polychroma Clade 2*) being present within the site.

The ecological effects relevant to the plan change request, and that have been considered in this Ecological Impact Assessment, include:

- Increased lot yield and the potential related effects on ecological and fauna, including a greater level of disturbance; and,
- The reduced area of restoration planting achieved through the amended Native Planting Restoration Management Plan.

Effects of the alternative stormwater management approach required to manage the water quality and quantity effects of increased residential development, as well as the earthworks and streamworks anticipated by the plan change have also been assessed to demonstrate that ecological effects can be appropriately managed at the future resource consenting stage.

The magnitude of effect has been assessed as Low or Negligible.

After considering the magnitude of effect, the various ecological effects of the increased lot yield and alternative Native Restoration Planting Management Plan sought by the plan change results in no more than a Low level of effect. Therefore, further effects management is not considered necessary to address any ecological effects of the plan change.

Furthermore, the assessment above demonstrates that future anticipated resource consenting matters, such as earthworks, streamworks, and stormwater discharges, can be appropriately managed at the time of resource consenting.

Contents

Disclaimer Statement i

Executive Summary..... iii

Figures iii

Tables iv

1. Introduction5

1.1. Purpose and Scope5

1.2. Site Description.....5

1.3. Existing Native Planting Restoration Management Plan.....6

2. Methodology.....7

2.1. Desktop Review7

2.2. Field Methodologies.....7

2.2.1. Vegetation.....7

2.2.2. Avifauna.....8

2.2.3. Bats.....8

2.2.4. Herpetofauna8

2.2.5. Wetland Delineation.....8

2.2.6. eDNA8

3. Current Ecological Values.....9

3.1. Ecological Context9

3.2. Vegetation9

3.2.1. Riparian/Wetland Edge9

3.2.2. Kanuka Scrub and Scrubland..... 11

3.2.3. Dryland – Coastal broadleaf..... 13

3.2.4. Mixed Shelterbelt Treeland 15

3.2.5. Pasture 16

3.3. Avifauna 16

3.4. Herpetofauna..... 19

3.5. Bats 20

3.6. Wetlands..... 20

3.6.1. Wetland 1 21

3.6.2. Wetland 2 22

3.6.3. Wetland 3 24

3.6.4. Wetland 4 25

3.6.5. Wetland 5 27

- 3.7. Streams 31
 - 3.7.1. Intermittent and Permanent Watercourses..... 31
 - 3.7.2. Ephemeral Watercourse..... 32
 - 3.7.3. Artificial Drains 32
 - 3.7.4. Aquatic Fauna 33
- 3.8. Summary of Current Ecological Values 34
- 4. Ecological Effects of the Proposed Private Plan Change 35
 - 4.1. Increased Lot Yield 35
 - 4.2. Alternative Native Planting Restoration Management Plan 36
 - 4.3. Alternative Stormwater Management Approach 38
 - 4.3.1. Water Quantity 38
 - 4.3.2. Water Quality 39
 - 4.3.3. Fish Passage..... 39
 - 4.4. Earthworks 40
 - 4.5. Streamworks 41
- 5. Conclusion and Effects Management..... 45
- 6. References 46
- Appendix 1 Maps 47
- Appendix 2 Assessment of Effects Methodology..... 48
- Appendix 3 CRPS Significance Criteria..... 50
- Appendix 4 Five Minute Bird Counts 51

Figures

Figure 1: Established riparian planting	10
Figure 2: Established riparian planting	10
Figure 3: Sparse native seedling regeneration under kanuka remnant.....	12
Figure 4: Oldest kanuka remnant with evidence of old man's beard control, new infestations, and native vine species <i>Muehlenbeckia australis</i>	12
Figure 5: Looking north-west across recent dryland planting and across the valley to additional dryland planting where the species composition is primarily kanuka.....	14
Figure 6: Within a more established dryland planting which has largely achieved canopy cover.	14
Figure 7: Line of macrocarpa.....	15
Figure 8: Poplar shelterbelt in a paddock with cattle	15
Figure 9: Wetland 1 mid-section.....	21
Figure 10: Wetland 1 lower section.....	21
Figure 11: Wetland 2 from the lower extent looking northwest	23
Figure 12: Wetland 2 from the upper extent looking southwest.....	23
Figure 13: Wetland 3 headwaters looking downstream	24
Figure 14: Wetland 3 <i>Carex</i> grasses with a kanuka remnant visible on the TRB.....	24
Figure 15: Wetland 4 located within pasture	26
Figure 16: Willow canopy dominates Wetland 4	26
Figure 17: Wetland 5 looking south, swathes of <i>Carex</i> with open water colonised by <i>azolla</i>	27
Figure 18: Wetland 5 looking northeast. <i>Kahikatea</i>	27
Figure 19: Culvert under Ocean Ridge Drive discharges into an intermittent stream which feeds into Wetland 5	31
Figure 20: Looking downstream from Wetland 1. Intermittent watercourse has been widened and deepened.....	31

Tables

Table 1: Assessment of riparian edge vegetation ecological values	10
Table 2: Assessment of kānuka scrub and scrubland vegetation ecological values.....	12
Table 3: Assessment of dryland – coastal broadleaf vegetation ecological values	14
Table 4: Assessment of mixed shelterbelt treeland vegetation ecological values	15
Table 5: Avifauna observations recorded within one km of the site	17
Table 6: Lizard species which are known in the wider area surrounding the site, conservation status, preferred habitat, and likelihood of presence at the site.....	19
Table 7: Assessment of Wetland 1 ecological values.....	22
Table 8: Assessment of Wetland 2 ecological values.....	23
Table 9: Assessment of Wetland 3 ecological values.....	24
Table 10: Assessment of Wetland 4 ecological values	26
Table 11: Assessment of Wetland 5 ecological values	27
Table 12: Summary of natural inland wetland delineations of three potential wetlands identified by desktop assessment.....	29
Table 13: Assessment of intermittent and permanent watercourse ecological values	32
Table 14: Detection of freshwater fish within Kowhai River recorded in the New Zealand Freshwater Fish Data Base (NZFFDB – accessed 25 February 2025) and from eDNA samples collected from the site on 25/02/2025. Conservation status obtained from Dunn et al 2017.....	33
Table 15: Summary of Existing Ecological Values.....	34
Table 16: Magnitude and level of effect	43
Table 17: Assigning value to species, vegetation, and habitats (summarised from EIANZ, 2018)	48
Table 19: Criteria for describing magnitude of effect (summarised from EIANZ, 2018).....	48
Table 20: Criteria for describing level of effects (from EIANZ, 2018).....	49
Table 21: Interpretation of effects against standard terms (modified from EIANZ, 2018).....	49

1. Introduction

1.1. Purpose and Scope

Cargill Station Limited propose a private plan change. The plan change seeks to (among other things):

- Increase the overall residential yield within the Ocean Ridge Development Area from 336 units (in the operative plan) up to 486 units (a 150 increase),
- Alter areas currently dedicated to open space/grazing to a combination of residential and large lot/lifestyle housing areas,
- Increase the total area dedicated to the Mixed-Use Area; and,
- Amend the Native Planting Restoration Management Plan (**NPRMP**) to account for those changes, the learnings from previous revegetation efforts, and provide more certainty in ownership and maintenance responsibilities going forward.

The purpose of this report is to detail the ecological values of the site, the ecological effects of the proposed private plan change, and provide recommendations for addressing any adverse ecological effects.

The ecological effects considered as part of this assessment are limited to those matters that relate to the private plan change (changes in zoning and plan provisions) and do not include any resource consenting matters.

To future proof the assessment of current ecological values for future resource consent applications, the Environment Canterbury Regional Policy Statement (**CRPS**) Significance Criteria (Appendix 3 of the CRPS) have been utilised alongside the EIANZ Ecological Impact Assessment Guidelines for use in New Zealand: Terrestrial and Freshwater Ecosystems, 2nd edition (**EclAG**) (Roper-Lindsay et al., 2018).

This EclA has been written in accordance with, and in reference to:

- Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems, 2nd edition (Roper-Lindsay et al., 2018),
- Kaikōura District Plan,
- Canterbury Regional Policy Statement 2013, Appendix 3 (Environment Canterbury, 2021),
- Canterbury Land and Water Regional Plan Volume 1 (Environment Canterbury, 2023),
- The National Policy Statement for Freshwater Management (Ministry for the Environment, 2023),
- The National Policy Statement for Indigenous Biodiversity 2023 (Ministry for the Environment, 2023).

1.2. Site Description

The Ocean Ridge Development area comprises 136 hectares and is located along coastal State Highway (SH) 1, 2.5 kilometres west of Kaikōura Township (hereon 'the site'). The site extends to the Kowhai River along its westward boundary, Ludstone Road to the north and adjoins the Kaikōura Golf Club, SH 1 and the Pacific Ocean to the south. The northwest boundary follows the main north line and the eastern boundary adjoins farmland and private property.

The site is comprised of rolling hills and alluvial plain with a network of wetlands and watercourses discharging under SH 1 into the dune system adjacent to the Pacific Ocean. The coastal receiving

environment is classified as an Area of Significant Natural Value – Whale, dolphin and Hutton’s shearwater area (Canterbury Maps, 2025).

The site has been partially developed and a portion of restoration planting already completed.

The maps provided in Appendix 1 provide an overview of the site, including the ecological features.

1.3. Existing Native Planting Restoration Management Plan

The existing NPRMP is dated 6 December 2004. It includes the areas of proposed riparian, wetland and dryland revegetation (shown as Figure 1 in the NPRMP). The areas are described within the NPRMP as including:

- 5.4 ha of wetland planting,
- 7.1 ha of riparian planting,
- 38.8 ha of dryland planting,
- Total: 51.3 ha.

The operative Kaikoura District Plan (KDP) includes the DEV2 chapter for the Ocean Ridge development. This chapter of the KDP includes the Outline Development Plan 1 (Appendix 1 of the DEV2 chapter). The Outline Development Plan (ODP) is referred to within the DEV2 chapter as well as the Subdivision chapter which outlines the Native Planting Area Standards.

The ODP shows the areas of proposed planting as wetland/riparian and dryland areas including:

- 15.5 ha of wetland planting,
- 31.8 ha of dryland planting,
- Total: 47.3 ha.

These areas differ slightly from those shown in the 2004 NPRMP. Direct comparison between the 2004 NPRMP and the ODP is difficult given the ODP:

- groups the predevelopment vegetation within dryland planting area,
- includes wetland planting in areas that are not delineated as wetland,
- does not include the residential native planting area.

Approximately 26.7 ha of restoration planting has been established to date. This provides in the order of 52% of the planting anticipated by the original NPRMP. A further 10.1 ha of pre-existing vegetation (not part of the restoration planting) is also present on the site.

2. Methodology

2.1. Desktop Review

A desktop assessment of the site and surrounding area was undertaken to provide insight into the recent history of the site and to identify potential or previously mapped ecological features by reviewing:

- Historic and present-day aerial images,
- Kaikōura District Council and Environment Canterbury GIS,
- Land Environment NZ (LENZ),
- New Zealand Freshwater Fish Database,
- Wilderlab eDNA database,
- National Amphibian and Reptile Database System (Herpetofauna),
- eBird Atlas of New Zealand,
- DOC bat database,
- iNaturalist records.

The findings of this assessment informed field survey method selection, as well as, targeted investigations during field surveying.

2.2. Field Methodologies

A preliminary site visit was conducted on 29/01/25 – 31/01/25 to:

- validate the extent of the existing vegetation on site,
- determine the ecological value and condition of the existing vegetation via a visual assessment,
- collect relevant data to inform an Alternative NPRMP to support the private plan change.

Four potential wetlands were identified during the preliminary site visit, together with the findings from a desktop survey of historical aerial imagery and available geospatial information. A subsequent site visit was conducted on 25/02/2025 – 26/02/2025 by two suitably qualified and experienced Environmental Scientists to assess:

- the presence and extent of wetlands on site. The Ministry for Environment's (MfE) Wetland Delineation Protocols was applied to confirm the classification and delineate the extent of the potential wetland areas,
- fauna assessments, including undertaking two 5-minute bird counts to assess avifauna presence and assessment and mapping of any grass skink habitat,
- undertake eDNA sampling.

2.2.1. Vegetation

Vegetation assessments during field surveying included:

- Identification and mapping of vegetation communities,
- Assessing the ecological value of various vegetation communities against the EclAG criteria and the Environment Canterbury RPS significance criteria,

2.2.2. Avifauna

Two 5-minute bird counts (5MBCs) were completed across the survey area with additional bird species seen or heard within the survey area recorded as incidental counts.

2.2.3. Bats

To help determine the likelihood of a bat population on site, nearby bat observations were assessed using the DoC bat database. In addition, bat habitat onsite was assessed by searching for suitable roost trees with diameter at breast height (dbh) greater than 10 cm, with cavities present.

2.2.4. Herpetofauna

Given the highly modified agricultural landscape, paucity of relevant local herpetofauna records, and likely impacts from the plan change request not including vegetation removal – a lizard survey was not considered necessary. Potential lizard habitat was assessed for presence and quality. This assessment focussed on grass skink habitat, being the only species considered to have a moderate likelihood of being present.

2.2.5. Wetland Delineation

The site was assessed for wetlands based on the definition in the Resource Management Act 1991 (RMA). The site was also assessed for 'natural inland wetlands' based on the definition within the National Policy Statement for Freshwater Management 2020 (NPS-FM) (last amended October 2024).

The assessment followed the Wetland Delineation Protocols as laid out in the *Wetland Delineation Protocols and Pasture Exclusion Assessment Methodology* (Ministry for the Environment, 2022a, 2022b).

The boundaries of three potential wetland areas were delineated in the ArcGIS FieldMaps mobile application for 20 2x2m plots across the three wetland areas. For each plot an assessment of the various vegetation communities, soils and hydrology was undertaken.

2.2.6. eDNA

eDNA was collected on 25/02/2025 at the base of the main wetland adjacent to 21 Greenburn Way. A six-replicate 5 µm sampling kit was used, and comprehensive analysis undertaken, to contribute to existing desktop fauna records.

3. Current Ecological Values

3.1. Ecological Context

The site is within the Kowhai Ecological District, which is characterised by plains, rivers, and the Seaward Kaikōura Range and includes the Kaikōura Peninsula and limestone reefs. This ecological district was formerly dominated by podocarp and podocarp/hardwood forests with kahikatea, matai, and tōtara. Fire-induced scrub and flood plain scrub were also common. Currently, there are limited forest remnants and small areas with scrub (McEwen 1987).

The coastal receiving environment is classified as an Area of Significant Natural Value – Whale, dolphin and Hutton's shearwater area in the Canterbury Regional Coastal Environment Plan. No Significant Natural Area overlays are present within the site.

3.2. Vegetation

Five terrestrial vegetation communities were identified and assessed within the site:

- Riparian/Wetland edge,
- Kanuka scrub and shrublands,
- Dryland planting,
- Mixed Shelterbelt Treeland,
- Pasture.

A summary of the vegetation assemblages along with an assessment of ecological value against the EclAG and CRPS Significance Criteria is provided below and mapped in Appendix 1. The guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury Region (Wildlands, 2013) were used in this analysis.

Most vegetation within the site falls within LENZ category 4 (<30% indigenous vegetation left and <10% protected.)

3.2.1. Riparian/Wetland Edge

Contiguous planting of approximately 6.1 ha along the riparian / wetland areas has been achieved through the central valley, connecting just below the headwaters to a wetland system. Native *Juncus* (*Juncus sp.*) along with *purei* (*Carex secta*) pedestals were present before planting and now have widespread coverage through the riparian / wetland areas. Riparian plantings are approximately 10metre-wide on each bank and are comprised of flax (*Phormium tenax*), manuka (*Leptospermum scoparium*), cabbage tree (*Cordyline australis*), koromiko (*Veronica salicifolia*), toetoe (*Cortaderia richardii*), lemonwood (*Pittosporum eugenoides*), ngaio (*Myoporum laetum*), five-finger (*Pseudopanax arboreus*), and kowhai (*Sophora microphylla*). All riparian plantings have been fenced from stock. Most of the riparian plantings have achieved canopy cover providing some shade over the watercourses.



Figure 1: Established riparian planting



Figure 2: Established riparian planting

Table 1: Assessment of riparian edge vegetation ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
			Native species dominate with moderate species diversity.
Representativeness	Moderate	1	With revegetation efforts having successfully established, the riparian margin is considered to represent a typical vegetation community characteristic of what would naturally be found in this location. Although the level of plant diversity is below that of a pristine natural system the vegetation community has the typical composition of the habitat type. Expected tiers and structure are not present, likely due to the time elapsed since the restoration efforts. Unlikely to support any threatened indigenous flora or fauna species.
Rarity/distinctiveness	Low	3	Wetlands are recognised as a priority for protection in the CRPS. Vegetation present is not threatened, nor at its distributional limits. Neither the vegetation community nor the species present is in an originally rare ecosystem

			nor formed through any unusual environmental conditions. Whilst the vegetation is reflective of a natural ecosystem type, it is yet to develop high species diversity and given the spatial scale does not reflect an ecological gradient or diverse natural features.
Diversity and pattern	Low	-	Sedges are well established along riparian margin with a limited understory and sparse canopy. Plantings generally are not old enough for full tiers to be present. Provides riparian function to intermittent and ephemeral streams and wetlands across the site. Provides limited habitat for freshwater fauna
Ecological context	Moderate	8	Vegetation is considered to provide an important ecological network given the extent of the planting and width which provides a buffering function for the streams/wetlands. Wetlands do provide a range of ecosystem functions. Given the scale the habitat is not likely to be significant at the ecological district or regional scale; nor for the wider Canterbury Region.

Overall, the riparian edge vegetation is assessed to have **Moderate** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, the riparian edge vegetation is assessed to be significant.

3.2.2. Kanuka Scrub and Scrubland

Over 10 kanuka (*Kunzea ericoides*) remnants along with sparse patches or standalone kanuka trees were present before development. Kanuka scrub is an intact remnant dominated by kanuka whereas scrubland represents sparse kanuka trees with pasture in between. All kanuka scrub and scrubland are dominated entirely by kanuka in the canopy. The understory of kanuka scrub is sparse with mahoe (*Melicytus ramiflorus*), *Coprosma rhamnoides*, five finger, and pig fern (*Hypolepis ambigua*) seedlings and saplings present. Weeds in the understory include inkweed (*Phytolacca octandra*), nightshade (*Solanum sp.*) and old man's beard seedlings (*Clematis vitalba*).

Despite canopy closure of the kanuka scrub, the invasive vine species, particularly old man's beard and blackberry (*Rubus fruticosus*), are evident across all remnants, and in some places smothering the canopy. Isolated patches of English ivy (*Hedera helix*) and banana passionfruit (*Passiflora tripartite var. mollissima*) were also observed. There was evidence of old man's beard control, along with new infestations. The native vine species *Muehlenbeckia australis* is prolific across the remnants.

Deer sign was observed which is the assumed reason for the sparse understory with all remnants fenced from grazing stock.



Figure 3: Sparse native seedling regeneration under kanuka remnant



Figure 4: Oldest kanuka remnant with evidence of old man's beard control, new infestations, and native vine species *Muehlenbeckia australis*

Table 2: Assessment of kānuka scrub and scrubland vegetation ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Low	-	Vegetation does not have a typical structure or composition. Whilst kanuka dominates, the expected species and tiers are not present and the scale is not large relative to the ecological district.
Rarity/distinctiveness	Very Low	3	Common habitat type and species present, not distinct or unusual. However, kanuka cover has reduced significantly within the Ecological District which is sufficient to qualify under this criterion.
Diversity and pattern	Very Low	-	Low diversity of within this habitat type; no noticeable changes in species composition reflecting the existence of diverse natural features or ecological gradients. Vegetation does contribute to an ecological network and in some locations within the site, provides an important buffering function.
Ecological context	Low	-	Unlikely to provide an important habitat type for native fauna; but does support a range of species foraging across the landscape and as potential roost trees; is likely an early successional mix that will overtime mature into a different vegetation community.

Overall, the kanuka scrub and scrubland vegetation is assessed to have **Low** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, the kanuka scrub and scrubland vegetation is assessed to be significant.

3.2.3. Dryland – Coastal broadleaf

Approximately 20.6 ha of dryland planting indicative of the coastal broadleaved vegetation type has been planted across the site which was previously absent. The planting mix is dominated by ngaio, five finger, mahoe, lemonwood, kanuka, wineberry (*Aristotelia serrata*), karamu (*Coprosma lucida*), kohuhu (*Pittosporum tenuifolium*). Canopy closure has been achieved in the established plantings providing the ecological benefits of suppressing shade intolerant weed species, reducing summer water stress, reducing the effects of frost and wind. Canopy closure also creates more perch sites for birds, which facilitates bird dispersed natural regeneration.

Tree lucerne (*Chamaecytisus palmensis*) was initially included, making up 50% of the mix to provide nitrogen fixing benefits, rapid establishment and provide light wells with an open canopy structure enabling natural regeneration of native species. This did not prove effective, with weed species outcompeting native species and was excluded from subsequent plantings.

Sparse natural regeneration of native seedlings in the understory, likely bird dispersed, were observed including lemonwood, kawakawa (*Piper excelsum*), mahoe, five finger, lucern, pig fern, and poroporo (*Solanum laciniatum*).

Weed species are limited to invasive vine species including old man's beard and isolated patches of blackberry especially along bush edges. Sparse hawthorn (*Crataegus monogyna*) and isolated willow (*Salix sp.*) were also observed.



Figure 5: Looking north-west across recent dryland planting and across the valley to additional dryland planting where the species composition is primarily kanuka



Figure 6: Within a more established dryland planting which has largely achieved canopy cover.

Table 3: Assessment of dryland – coastal broadleaf vegetation ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Moderate	1, 2	Indigenous vegetation considered to represent a degraded example of this habitat type; not all typical characteristics, or diversity displayed. Relatively large example within the ED.
Rarity/distinctiveness	Moderate	3	An example of a degraded Indigenous vegetation that has been reduced to less than 20% of its former extent in the relevant land environment, Not at its distribution limit within Canterbury Region or nationally. Not an originally rare ecosystem, nor has it developed as a result of an unusual environmental factor or combinations of factors.
Diversity and pattern	Low	-	Indigenous vegetation does not contain a high diversity of indigenous ecosystem or habitat types, indigenous taxa, or has changes in species composition reflecting the existence of diverse natural features or ecological gradients.
Ecological context	Moderate	8, 10	Vegetation contributes to an important ecological linkage or network, particularly for any fauna foraging across the wider rural exotic grasslands given the reduced native vegetation landcover across the ED.

Overall, the dryland vegetation is assessed to have **Moderate** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, the dryland vegetation is assessed to be significant.

3.2.4. Mixed Shelterbelt Treeland

Various shelter and amenity exotic tree stands are present across the site. These include two rows of macrocarpa (*Cupressus macrocarpa*) along the northern boundary, mature willow along wetland 4 on the eastern boundary, scattered gum trees along the eastern face of the Ingles Drive ridge line, and a mature poplar (*Poplar sp.*) stand along Ludley Drive. The pasture beneath the poplars, macrocarpa and willow are all grazed.



Figure 7: Line of macrocarpa



Figure 8: Poplar shelterbelt in a paddock with cattle

Table 4: Assessment of mixed shelterbelt treeland vegetation ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Very Low	-	This vegetation type is not typical or characteristic of the structure and composition that would naturally be found at this location.
Rarity/distinctiveness	Very Low	-	Mixed shelterbelt treeland are not considered to be rare in terms of scarcity of species, communities, habitats or ecosystem types. Species, habitats, or ecological features present are not considered to be prone or at risk of local or national loss or extinction.
Diversity and pattern	Low	-	The mature trees within this community provide a potential habitat type for native long-tailed bats, and cavity nesting bird species such as kingfisher and

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Ecological context	Low	-	morepork. Macrocarpa, poplar and gum trees are the only trees onsite large enough with cavities (e.g., deep knot holes), or loose bark for roosting sites. However, no records of bats within approximately 80 km of the site have been recorded, despite survey efforts. Potentially provide roosting habitat function for fauna but does not contribute to an important ecological linkage or perform a buffering function.

Overall, the mixed shelterbelt vegetation is assessed to have **Negligible** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, the mixed shelter belt vegetation is assessed to not be significant.

3.2.5. Pasture

Pasture vegetation type is dominated by agricultural grasses including perennial rye grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), white clover (*Trifolium repens*), cocksfoot (*Dactylis glomerata*), narrow leaf plantain (*Plantago lanceolata*), browntop (*Agrostis capillaris*), dock (*Rumex obtusifolius*), buttercup (*Ranunculus sp.*).

Sparse patches of gorse (*Ulex europaeus*) and scotch thistle are present across the grazed pasture, with evidence of herbicide application.

Areas of pasture are assessed as to have **Negligible** ecological value and not be significant.

3.3. Avifauna

Avifauna that may be present at the subject site is informed by research-grade records available from iNaturalist within a 1 km radius, as well as, the eBird hotspot located at the Kowhai River mouth (approximately 1 km from the subject site). In addition, two five-minute bird counts were undertaken and an eDNA sample collected. The results from these assessments are summarised in Table 5 below.

A full list of birds identified at each five-minute bird count are presented Appendix 4. Pāteke (*Anas chlorotis or gracilis*), was identified via eDNA sampling which has a threat status of Threatened – Nationally Increasing (brown teal) or Not Threatened (grey teal). Given that brown teal distribution is mostly restricted to northern North Island and grey teal have the greatest concentrations within the Canterbury region, it is more likely than not the eDNA result is for the Not Threatened grey teal.

Most of the species identified at the nearby eBird hotspot are coastal species that are more likely to utilise the coastal, river mouth and braided river system habitats. However, some of the coastal species may periodically and temporarily utilise the open pasture habitats within the site. The open pasture habitat is abundant within the wider landscape.

The majority of native species present are Not Threatened (assuming the eDNA result is for grey teal) and Introduced and Naturalised exotic species. The 1 km search radius takes in the coastal foreshore and has

therefore captured several threatened coastal species. None of the Threatened or At Risk coastal species recorded are considered likely to utilise the habitat available within the site on more than a transitory basis.

While eastern falcon may forage over the site; which would comprise a small proportion of this species home range, the eBird record of eastern falcon is limited to a single observation at the river mouth in 2023.

Therefore, given the majority of the avifauna community likely to utilise the site is Not Threatened, avifauna has been assessed as a **Low** ecological value,

Table 5: Avifauna observations recorded within one km of the site

Common name / Te reo name	Scientific name	Threat Status (Robertson et al, 2021)	Source (iNat, eBird, 5MBC, incidental)
Black-fronted tern / Tarapirohe	<i>Chlidonias albostratus</i>	Threatened - Nationally Endangered	eBird
Reef Heron / Matuku moana	<i>Egretta sacra</i>	Threatened - Nationally Endangered	eBird
Caspian Tern / Taranui	<i>Hydroprogne caspia</i>	Threatened - Nationally Vulnerable	eBird
Spotted shag / Kawau tikitiki	<i>Stictocarbo punctatus</i>	Threatened - Nationally Vulnerable	eBird
Hutton's shearwater / Kaikōura tītī	<i>Puffinus huttoni</i>	Threatened - Nationally Vulnerable	eBird
Eastern Falcon / Kārearea	<i>Falco novaeseelandiae</i>	Threatened - Nationally Vulnerable	eBird
Brown or grey teal / Pāteke	<i>Anas chlorotis or gracilis</i>	Threatened – Nationally Increasing or Not Threatened	eDNA
Banded dotterel / Pohowera	<i>Anarhynchus bicinctus</i>	At Risk - Declining	eBird
White-fronted tern / Tara	<i>Sterna striata</i>	At Risk - Declining	eBird
Red-billed Gull / Tarāpunga / Silver gull	<i>Chroicocephalus novaehollandiae</i>	At Risk – Declining	eBird
Black-billed gull / Tarāpuka	<i>Larus bulleri</i>	At Risk - Declining	eBird
Buller's shearwater / Rako	<i>Puffinus bulleri</i>	At Risk - Declining	eBird
South Island Pied Oystercatcher / Tōrea	<i>Haematopus finschi</i>	At Risk - Declining	eBird
Variable Oystercatcher / Tōrea pango	<i>Haematopus unicolor</i>	At Risk - Recovering	eBird
Pied shag / Kāruhiruhi	<i>Phalacrocorax varius</i>	At Risk - Recovering	eBird
Northern giant petrel / Pāngurunguru	<i>Macronectes halli</i>	At Risk - Recovering	eBird
Little shag / Kawaupaka	<i>Microcarbo melanoleucos</i>	At Risk - Relict	eBird
Black shag / Māpunga	<i>Phalacrocorax carbo</i>	At Risk - Relict	eBird
Black-fronted dotterel /	<i>Elseyaornis melanops</i>	At Risk - Naturally Uncommon	eBird

Common name / Te reo name	Scientific name	Threat Status (Robertson et al, 2021)	Source (iNat, eBird, 5MBC, incidental)
Australasian swamphen / Pūkeko	<i>Porphyrio melanotus</i>	Not Threatened	iNaturalist
Southern black-backed gull / Karoro / Kelp gull	<i>Larus dominicanus</i>	Not Threatened	5MBC, eBird
Welcome swallow / Warou	<i>Hirundo neoxena</i>	Not Threatened	5MBC, eBird
White-faced heron / Matuku moana	<i>Egretta novaehollandiae</i>	Not Threatened	eBird
New Zealand Fantail / Pīwakawaka	<i>Rhipidura fuliginosa</i>	Not Threatened	5MBC, eBird
Silvereye / Tauhou	<i>Zosterops lateralis</i>	Not Threatened	eDNA, 5MBC, eBird
Paradise shelduck / Pūtangitangi	<i>Tadorna variegata</i>	Not Threatened	eBird
Pied stilt / Poaka	<i>Himantopus leucocephalus</i>	Not Threatened	eBird
Spur-winged plover / Masked lapwing	<i>Vanellus miles</i>	Not Threatened	eBird
Swamp harrier / Kāhu	<i>Circus approximans</i>	Not Threatened	eBird
Grey warbler / Riroriro	<i>Gerygone igata</i>	Not Threatened	eBird
Australasian gannet / Tākapu	<i>Morus serrator</i>	Not Threatened	eBird
Sacred kingfisher / Kōtare	<i>Todiramphus sanctus</i>	Not Threatened	eBird
Bellbird / Korimako	<i>Anthornis melanura</i>	Not Threatened	5MBC, eBird
Australasian shoveler / Kuruwhengi	<i>Spatula rhynchotis</i>	Not Threatened	eBird
Morepork / Ruru	<i>Ninox novaeseelandiae</i>	Not Threatened	eBird
Arctic skua	<i>Stercorarius parasiticus</i>	Non-resident Native - Migrant	eBird
Eastern Cattle Egret	<i>Ardea ibis coromanda</i>	Non-resident Native - Migrant	eBird
Rock Pigeon	<i>Columba livia</i>	Introduced and Naturalised	eBird
Common starling / Tāringi	<i>Sturnus vulgaris</i>	Introduced and Naturalised	eDNA, eBird
House Sparrow / Tiu	<i>Passer domesticus</i>	Introduced and naturalised	eDNA, eBird
Song thrush / Manu-kai-hua-rakau	<i>Turdus philomelos</i>	Introduced and Naturalised	5MBC, eDNA, eBird
Dunnock	<i>Prunella modularis</i>	Introduced and Naturalised	eDNA, eBird
Yellowhammer	<i>Emberiza citrinella</i>	Introduced and Naturalised	eBird
European goldfinch / Kōurarini	<i>Carduelis carduelis</i>	Introduced and Naturalised	5MBC, eBird
Australian magpie / Makipai	<i>Gymnorhina tibicen</i>	Introduced and Naturalised	eBird
Eurasian blackbird / Manu pango	<i>Turdus merula</i>	Introduced and Naturalised	eBird
Chaffinch / Pahirini	<i>Fringilla coelebs</i>	Introduced and Naturalised	5MBC, eBird

Common name / Te reo name	Scientific name	Threat Status (Robertson et al, 2021)	Source (iNat, eBird, 5MBC, incidental)
Canada Goose	<i>Branta canadensis</i>	Introduced and Naturalised	eBird
California Quail	<i>Callipepla californica</i>	Introduced and Naturalised	eBird
Eurasian skylark / Kairaka	<i>Alauda arvensis</i>	Introduced and Naturalised	eBird
European greenfinch	<i>Carduelis chloris</i>	Introduced and Naturalised	eBird
Common redpoll	<i>Carduelis flammea</i>	Introduced and Naturalised	eBird
Mallard	<i>Anas platyrhynchos</i>	Introduced and Naturalised	5MBC, eDNA

3.4. Herpetofauna

An assessment of the National Amphibian and Reptile Database System shows several records of Waiharakeke grass skink (*Oligosoma aff. polychroma* Clade 2), Minimac Gecko (*Woodworthia "marlborough mini"*) and Raukawa geckos (*Woodworthia maculata*) within the surroundings area. Waiharakeke grass skinks are relatively abundant throughout their range from the eastern Marlborough Sounds to Kaikōura, and can be found in highly modified sites, including exotic pasture and gardens. Therefore, there is a possibility of these species being present within the site.

The Marlborough mini geckos prefer habitat of rock crevices, trunk hole refuges, or large fallen woody debris. This habitat is not present on site as the maturity of the revegetation planting is not as a stage to provide this habitat.

Waiharakeke grass skinks prefer habitat of sunlit forest edge grass and weedy areas (not under heavy shade of planted trees cover). Areas of suitable grass skinks habitat are limited to areas of rank Yorkshire fog on the margins of the existing vegetation, particularly where north facing where not under the shade of the existing vegetation. Overall, the habitat available for grass skinks is limited and marginal. The site does not have the rocky coastal habitat preferred by Raukawa geckos.

Rough geckos (*Naultinus rudis*) are unlikely to be present within the site and are mostly confined to slopes of the adjoining hill country where there is decent scrub cover.

Given the low to moderate likelihood of the presence of At Risk – Declining Waiharakeke grass skink, herpetofauna has been assessed to have a **High** ecological value

Table 6: Lizard species which are known in the wider area surrounding the site, conservation status, preferred habitat, and likelihood of presence at the site.

Species	Common name	Conservation status (Hitchmough et al, 2021)	Preferred habitat	Presence likelihood
<i>Naultinus rudis</i>	Rough Gecko	Threatened - Nationally Endangered	Being an arboreal species, rough geckos are closely associated with forested habitats and thus inhabit a wide variety of forest types in the northeastern South Island, including swamps, scrubland, and mature forest. Rough gecko favour scrubby/regenerating habitats, but this may be a result of the relative ease of access, and amount of search effort that these sites garner.	Unlikely

<i>Oligosoma polychroma</i> Clade 2	off. Waiharakeke grass skink	At Risk - Declining	Waiharakeke grass skink occupy a wide range of habitat types preferring open areas including coastal vegetation, rock piles, grassland, flaxland, shrubland, screes, forest margins tussock and modified urban / suburban habitats. Often takes refuge in dense vegetation or under rocks and logs when not active.	Low - moderate
<i>Woodworthia maculata</i>	Raukawa geckos	Not Threatened	Primarily terrestrial and saxicolous (rock-dwelling) but is known to climb into small trees and shrubs. Raukawa geckos live at lower elevations between mountain ranges but also range up into the alpine (1800 metres a.s.l). They can be found in the stable bases of scree slopes, rocky river terraces and shattered outcrops in dry sub-alpine. They are primarily associated with greywacke rock formations.	Unlikely
<i>Woodworthia "marlborough mini"</i>	Minimac Gecko	At Risk - Declining	A nocturnal species, that is saxicolous (rock dwelling) and terrestrial. Found in a variety of habitats from the coast, where it inhabits boulder beach habitats, through to the alpine zone where it is associated with rocky habitats (screes, talus slopes, and rock outcrops)	Unlikely

3.5. Bats

Isolated populations of pekapeka / New Zealand long-tailed bats (*Chalinolobus tuberculatus*, status 'Threatened - nationally vulnerable') persist in North Marlborough and Canterbury (O'Donnell et al, 2022). Online bat records indicate that the nearest record of bats of over 80 km away near St. Arnaud, despite survey efforts in closer proximity.

Long-tailed bats require large trees (including standing dead trees) with cavities (e.g., deep knot holes), epiphytes or loose bark for roosting with sheltered trees preferred. The mature macrocarpa, poplar and gum trees are the only trees onsite are large enough with cavities (e.g., deep knot holes), or loose bark for potential roosting sites. The remainder of the native vegetation is not old enough to provide suitable habitat.

The site is not proximate (within the foraging distance) of any of the known populations of the southern subspecies of the short-tailed bat (*Mystacina tuberculata tuberculata*) from Fiordland/Codfish Island.

Despite the potential roost habitat present, the lack of records of bat presence and the limited and isolated extent of potential habitat means bat presence is unlikely.

3.6. Wetlands

Five natural inland wetlands as defined by the Resource Management Act (**RMA**) and the National Policy Statement Freshwater Management (**NPS-FM**) were identified within the site.

Potential natural inland wetlands, identified by desktop assessment and previous site walkover, were assessed in the field using the wetland delineation protocols from the Ministry for the Environment (2022a). This consisted of 20 wetland plots (Table 12; Appendix 1) across three potential wetland areas. A

fourth area could not be assessed in detail during the second site visit due to livestock presence, however, is considered a natural inland wetland based on the previous data collected. A fifth clearly defined wetland area through the centre of the site was visually assessed but not investigated further. All three of the three potential natural inland wetlands within the site were assessed as wetlands and natural inland wetlands as defined by the RMA and NPS-FM respectively.

The EcIAZ and CRPS Significance Criteria (CRPS, Appendix 3) were used as a guideline to assess and assign value to the natural inland wetlands that were delineated. Wetlands are a national priority for biodiversity protection (Ministry for the Environment and Department of Conservation 2007a, 2007b) assigning a **High** value to rarity and distinctiveness to all five natural inland wetlands.

The guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury Region (Wildlands, 2013) were used in this assessment.

3.6.1. Wetland 1

Wetland 1 is located in the western section of the site, fed by several farm drains and an intermittent watercourse which appears to drains from the other side of the Main Trunk Railway. The upper extent of the wetland is confined by an access road and drained pasture, the mid-section has been partially planted with areas of open water, and the lower section is intersected by the access road and feeds into a modified intermittent watercourse. The wetland has been fenced from stock.

The vegetation sequence varies along the wetland extent. Creeping buttercup (*Ranunculus repens*) dominates the western arm, *Juncus edgariae* and *Juncus effusus* along the northern extent. Swathes of *Carex secta* and flax prevail through the mid-section with patches of open water colonised by azolla (*Azolla* sp.). The lower section, south of the access road, is characterised by creeping bent (*Agrostis stolonifera*) and mercer grass (*Paspalum distichum*) with patches of juncus sp. The upper banks of the wetland remain in rank pasture grass with sparse grey willow saplings <2m tall evident along the wetland edge.



Figure 9: Wetland 1 mid-section



Figure 10: Wetland 1 lower section

Table 7: Assessment of Wetland 1 ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Moderate	1	The vegetation sequence is dominated by native obligate wetland species through the centre. Exotic vegetation in the upper and lower wetland and the wetland edge as well as, modification through surrounding pasture drainage lowers the score. Where planted, representative of a degraded example typical/characteristic habitat type; otherwise not representative of a natural wetland vegetation community being mainly dominated by exotic pasture grasses.
Rarity/distinctiveness	High	3	Wetlands are a national priority for biodiversity protection (Ministry for the Environment and Department of Conservation 2007a, 2007b). Mapped as a wetland by DOC and Canterbury Regional wetlands.
Diversity and pattern	Low	-	Highly modified environment, current native plant species diversity is limited to the planted section of the wetland and is below the expected level for natural wetland habitat.
Ecological context	Low / Moderate	-	Wetland has experienced a high level of modification through surrounding pasture drainage and access road construction. Adjacent to Kowhai River, connected downstream to a highly modified watercourse and piped into stormwater management device. Not likely to support nationally or locally threatened or uncommon species. Provides aquatic habitat for macroinvertebrates and terrestrial habitat for mainly birds.

Overall, wetland 1 is assessed to have **Moderate** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, Wetland 1 is considered a significant habitat of indigenous biodiversity.

3.6.2. Wetland 2

Wetland 2 is located along the northwestern boundary, within a grazed paddock and has been impacted by stock pugging. Ocean Ridge Drive is located on the upper true left bank while the Main Trunk Railway is along the True Right Bank (TRB). The wetland is fed by an ephemeral and intermittent watercourse, also impacted by stock pugging. Several outlets from under the Main North Trainline feed the into the wetland. A culvert connects the lower extent of the Wetland 2 to Wetland 5.

The vegetation sequence is characterised by clusters of *Juncus australis* interspersed throughout the dominant native herbs, *Juncus articulatus*, *Eleocharis acuta* and exotic creeping bent. The wetland edge and upper slopes remain in pasture grass, grazed by sheep.



Figure 11: Wetland 2 from the lower extent looking northwest



Figure 12: Wetland 2 from the upper extent looking southwest

Table 8: Assessment of Wetland 2 ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Low	-	The vegetation sequence is dominated by native facultative wetland species through the centre. Exotic vegetation throughout the wetland and dominant exotic pasture grass along the wetland edge and banks lowers the score. Vegetation is not representative, typical or characteristic habitat type; being mainly dominated by exotic pasture grasses.
Rarity/distinctiveness	High	3	Wetlands are a national priority for biodiversity protection (Ministry for the Environment and Department of Conservation 2007a, 2007b). Riverine wetland with little diversity of aquatic habitat, unlikely to support high diversity of freshwater fauna.
Diversity and pattern	Low	-	Highly modified environment with limited native biodiversity through the central wetland, wider landscape is dominated by pasture grass.
Ecological context	Low	-	Stock damage throughout and lower connectivity impacted by culvert. Wetland buffered by agricultural land and urban development. Not likely to support nationally or locally threatened or uncommon species. Very limited freshwater habitat available.

Overall, the wetland is assessed to have **Moderate** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, Wetland 2 is considered a significant habitat of indigenous biodiversity.

3.6.3. Wetland 3

Wetland 3 is located through the centre of the site with the headwaters in pasture with stock access and the mid and lower sections within a restoration planting area. A culvert under Ocean Ridge Drive connects the lower extent of Wetland 3 with the top of Wetland 5. The wetland includes and is interspersed with, sections of more defined watercourses.

The vegetation assemblage varies along the extent of the wetland. The vegetation in the headwaters is dominated by exotic species including creeping bent, Yorkshire fog and buttercup. The wetland edge and upper banks are dominated by pasture grasses and patches of gorse which have been sprayed. The upper section of the wetland is accessible to stock with pugging evident.

Through the mid and lower sections of the wetland, mature *Carex secta* pedestals approximately 1.5 m high dominate the channel with swathes of *Carex geminata* interspersed. The TRB includes a kanuka remnant with a canopy 8-10m high. The True Left Bank (TLB) has an established riparian planted margin which requires infill planting through some sections. The mid and lower sections of the wetland have been fenced from stock; however, deer sign and pugging were observed.



Figure 13: Wetland 3 headwaters looking downstream



Figure 14: Wetland 3 Carex grasses with a kanuka remnant visible on the TRB

Table 9: Assessment of Wetland 3 ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Moderate	1	The vegetation sequence is dominated by native facultative wetland species through the centre with an established 60 m wide native planted corridor along most of the wetland. The catchment has been heavily modified through agriculture, however the riverine wetland corridor remains intact. Exotic vegetation throughout the headwaters and impact of stock pugging lowers the score.
Rarity/distinctiveness	High	3	Wetlands are a national priority for biodiversity protection (Ministry for the Environment and Department

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Diversity and pattern	Moderate	7	of Conservation 2007a, 2007b). Headwater riverine wetland with little diversity of aquatic habitat, potential to provide habitat for upland bully (not threatened) identified via eDNA sampling downstream. Highly modified catchment, with much of the wetland enhanced with native restoration planting creating an approximate 60 m wide corridor. Diversity limited by planting palette, with the oldest stand of kanuka located along TRB.
Ecological context	Moderate	-	Stock damage throughout upper extent and lower connectivity impacted by culvert. Approximately 60 m wide planted corridor along most of the wetland providing habitat for birds. Not likely to support nationally or locally threatened or uncommon species. Very limited freshwater habitat available.

Overall, the wetland is assessed to have **Moderate** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, Wetland 3 is considered a significant habitat of indigenous biodiversity.

3.6.4. Wetland 4

Wetland 4 is located along the eastern boundary, within pasture and has been impacted by stock pugging. The upstream extent is in adjoining private property and downstream the wetland discharges into a watercourse through private farmland that appears to have been highly modified.

The vegetation assemblage is entirely comprised of Willow (*Salix sp*) in the canopy. The understory is dominated by weed species including blackberry, hawthorn, inkweed, willow weed, with sparse native *Muelenbeckia australis*, and stinging nettle present. Ground cover includes buttercup and white clover.



Figure 15: Wetland 4 located within pasture



Figure 16: Willow canopy dominates Wetland 4

Table 10: Assessment of Wetland 4 ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Very Low	-	Wetland has been heavily impacted by the presence of willow and stock pugging. Not representative of a natural wetland vegetation community.
Rarity/distinctiveness	High	-	Wetlands are a national priority for biodiversity protection (Ministry for the Environment and Department of Conservation 2007a, 2007b), however the assemblage is dominated by exotic species with no threatened species evident.
Diversity and pattern	Very Low	-	Environment highly modified by agriculture. Very few native species present and well below the expected level for natural wetland habitat.
Ecological context	Low	-	Wetland is likely a result of modification resulting in limited ecological function. May provided limited habitat for avifauna. Limited hydrological connectivity to a modified watercourse through farmland downstream.

Overall, the wetland is assessed to have **Moderate** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, Wetland 4 is not considered a significant habitat of indigenous biodiversity.

3.6.5. Wetland 5

Wetland 5 is located in the centre of the site with Wetland 2 and 3 feeding into the upper extent via culverts. The wetland has been planted along with a riparian margin creating a buffer from residential development along the eastern side and farmland along the western side.

The vegetation assemblage is characterised by *Carex secta* and *Juncus australis* dominating with large areas of open water colonised by azolla. Patches of flax and willow are present along the flats with sparse cabbage trees, kahikatea and several juvenile willows establishing as canopy species.



Figure 17: Wetland 5 looking south, swaths of carex with open water colonised by azolla.



Figure 18: Wetland 5 looking northeast. Kahikatea

Table 11: Assessment of Wetland 5 ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Moderate	1	The vegetation sequence is dominated by native obligate wetland species through the centre. Year round standing water present. Vegetation is representative, typical or characteristic habitat type; being mainly dominated by native sedges; although is considered a degraded example and clearly influence by anthropogenic actions (exotic specimen trees).
Rarity/distinctiveness	High	3	Wetlands are a national priority for biodiversity protection (Ministry for the Environment and Department of Conservation 2007a, 2007b).
Diversity and pattern	Moderate	-	Highly modified catchment, with much of the wetland enhanced with native restoration planting. Diversity limited by planting palette. Most diverse aquatic habitat across all wetlands with year-round standing water.
Ecological context	Moderate	-	Planted corridor within and around wetland providing habitat for avifauna. Standing water available year-round with established obligate wetland vegetation providing habitat for aquatic fauna. Not likely to support nationally or locally threatened or uncommon species.

Overall, the wetland is assessed to **Moderate** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, Wetland 5 is considered a significant habitat of indigenous biodiversity.

Table 12: Summary of natural inland wetland delineations of three potential wetlands identified by desktop assessment

Potential natural inland wetland	Wetland plot	Vegetation			Soil	Hydrology	Natural Inland Wetland (NPS-FM)
		Rapid test	Dominance test	Prevalence index			
1	1-1	Pass	Pass	Pass	-	-	Pass – this point is a natural inland wetland
	1-2	Fail	Pass	Pass	-	-	Pass
	1-3	Fail	Fail	Fail	Fail	Fail	Fail – this point is not a natural inland wetland
	1-4	Fail	Pass	Fail	Pass	Pass	Pass
	1-5	Fail	Fail	Fail	Pass	Fail	Fail
	1-6	Pass	Pass	Pass	-	-	Pass
	1-7	Fail	Fail	Fail	Fail	Fail	Fail
	1-8	Fail	Pass	Pass	-	-	Pass
	1-9	Fail	Fail	Fail	Fail	Fail	Fail
	1-18	Fail	Fail	Fail	Fail	Fail	Fail
	1-19	Pass	Pass	Pass	-	-	Pass
	1-20	Fail	Fail	Fail	Fail	Fail	Fail
2	2-10	Pass	Pass	Pass	-	-	Pass
	2-11	Fail	Fail	Fail	Fail	Fail	Fail

Potential natural inland wetland	Wetland plot	Vegetation			Soil	Hydrology	Natural Inland Wetland (NPS-FM)
		Rapid test	Dominance test	Prevalence index			
3	2-12	Fail	Fail	Fail	Fail	Fail	Fail
	2-13	Pass	Pass	Pass	-	-	Pass
	2-14	Fail	Pass	Pass	-	-	Pass
	2-15	Fail	Fail	Fail	Fail	Fail	Fail
	2-16	Fail	Fail	Fail	Pass	Fail	Fail
	2-17	Fail	Fail	Fail	Fail	Fail	Fail

3.7. Streams

Watercourses are located within the site as shown in Appendix 1. Watercourses have been broadly categorised permanent / intermittent or ephemeral. Distinctions between modified / natural and artificial watercourses have also been made following the definitions in the Canterbury Land and Water Regional Plan (Environment Canterbury, 2025). As the field survey was completed during summer, these assessments are indicative only.

The watercourses can be broadly grouped into the following:

- Modified and/or restored intermittent / permanent watercourses,
- Ephemeral watercourses,
- Artificial drains.

The EclAG and CRPS Significance Criteria (CRPS, Appendix 2) were used as a guideline to assess and assign value to the watercourses. The guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna in Canterbury Region (Wildlands, 2013) were used in this assessment.

3.7.1. Intermittent and Permanent Watercourses

The majority of watercourses in this category have already been highly modified and restored as part of the early stages of development. Several streams have been rock lined, are include inlets and outfalls or culverts under road corridors and have piped sections up or downstream. The majority of watercourses in this category have a 10 m wide riparian strip on both sides of the watercourse.



Figure 19: Culvert under Ocean Ridge Drive discharges into an intermittent stream which feeds into Wetland 5



Figure 20: Looking downstream from Wetland 1. Intermittent watercourse has been widened and deepened

Table 13: Assessment of intermittent and permanent watercourse ecological values

Assessment matter	Ecological value (EIANZ, 2018)	Environment Canterbury RPS Appendix 3 Criteria Met	Reasoning
Representativeness	Low	-	Streams in this class are typical or characteristic of similar streams in the catchment, ecological/district/region that demonstrate the influence of catchment land uses being modified for agricultural production.
Rarity/distinctiveness	Low	-	Records within the site are only for Not threatened upland bully. Species distribution likely limited by the intermittent nature of the stream and downstream barriers. Such streams did not contain any distinctive ecological features.
Diversity and pattern	Low	-	The level of natural diversity and complexity is low. There are no outstanding matters to consider in regard to pattern, complexity, size, shape.
Ecological context	Low	-	Little by way of in stream habitat (abundance, quality or diversity). Some riparian habitat due to past revegetation efforts that form an important ecological corridor due to the modification of the surrounding land for agricultural production

Overall, the intermittent and permanent watercourses are assessed to have **Low** ecological value.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, the intermittent and permanent watercourses are assessed to not be significant.

3.7.2. Ephemeral Watercourse

An ephemeral watercourse is located within the headwaters of wetland 2 as shown in Appendix 1. This watercourse is located within a paddock and has been impacted by stock pugging. These watercourses are not fenced from stock.

Overall, the ephemeral watercourse is assessed to have **Negligible** ecological value under the EclAG criterion.

Areas or habitats are considered to be significant if they meet one or more of the criteria in Appendix 3 of the CRPS. Therefore, the ephemeral watercourses are assessed to not be significant.

3.7.3. Artificial Drains

A series of artificial watercourses form a drainage system draining the paddock to the northeast of wetland 1. These channels are straightened and appear to be maintained (excess sediments removed, widened and deepened), on a regular basis. The surrounding vegetation is comprised of pasture grass.

Overall, the artificial drains are assessed to have **Negligible** ecological value and not be significant.

3.7.4. Aquatic Fauna

There are no NZFFDB records for the waterbodies within the site. However, there are several records of native freshwater fish species for the adjacent Kowhai River (Table 14).

The eDNA data collected in field show the presence of no Threatened-Nationally Vulnerable or At Risk – Declining indigenous fish species. Upland bully (*Gobiomorphus breviceps*) was the only fish species identified via eDNA sampling, which has the conservation status, Not Threatened. Therefore, freshwater fish have been assessed to have a **Low** ecological value

Table 14: Detection of freshwater fish within Kowhai River recorded in the New Zealand Freshwater Fish Data Base (NZFFDB – accessed 25 February 2025) and from eDNA samples collected from the site on 25/02/2025. Conservation status obtained from Dunn et al 2017.

Common Name	Scientific Name	NZFFDB (Kowhai River only)	eDNA	Conservation Status (Dunn et al, 2018).
Bluegill bully	<i>Gobiomorphus hubbsi</i>	X		At Risk - Declining
Canterbury galaxias	<i>Galaxias vulgaris</i>	X		At Risk - Declining
Īnanga	<i>Galaxias maculatus</i>	X		At Risk - Declining
Kōaro	<i>Galaxias brevipinnis</i>	X		At Risk - Declining
Longfin eel	<i>Anguilla dieffenbachii</i>	X		At Risk - Declining
Torrentfish	<i>Cheimarrichthys fosteri</i>	X		At Risk - Declining
Giant kokopu*	<i>Galaxias fasciatus</i>	X		At Risk - Declining
Common bully	<i>Gobiomorphus cotidianus</i>	X		Not threatened
Upland bully	<i>Gobiomorphus breviceps</i>	X	X	Not threatened
Redfin Bully	<i>Gobiomorphus huttoni</i>	X		Not threatened

* A single record from 1999

3.8. Summary of Current Ecological Values

Table 15 below provides a summary of the assessed ecological values.

Table 15: Summary of Existing Ecological Values

Ecological feature / fauna	Ecological Value
Riparian edge vegetation	Moderate
Kanuka scrub and scrubland vegetation	Low
Dryland (coastal broadleaf) vegetation	Moderate
Mixed shelterbelt vegetation	Negligible
Pasture	Negligible
Avifauna	Very High
Herpetofauna	High
Wetlands (1-5)	Moderate
Intermittent and permanent watercourse	Low
Ephemeral watercourse	Negligible
Artificial drains	Negligible
Aquatic Fauna	Low

4. Ecological Effects of the Proposed Private Plan Change

The ecological effects considered as part of this assessment are limited to those matters that relate to the private plan change (i.e. increased lot yield and the alternative NRPMP) and do not include any resource consenting matters. However, the effects of the alternative stormwater management approach is discussed below along with earthworks and streamworks effects to support demonstrating ecological effects from those activities can be appropriately managed at the time of resource consenting.

The assessment below follows EclAG. The EclAG utilises a standard framework and matrix approach providing a consistent and transparent assessment of effects. The framework for assessment provides structure to quantify the level of ecological effects but needs to incorporate sound ecological judgement to be meaningful. Criteria from the EclAG is used to assign magnitude of effect of each impact and derive the level of effect. The EclAG methodology and criteria are summarised in Appendix 2.

Each of the identified ecological effects associated with the proposed plan change are described below and an assessment of the magnitude of effect provided. Table 15 provides a summary of the assessed current ecological values, magnitude of effect, and the resulting level of effect.

4.1. Increased Lot Yield

Increased lot yield and residential development has the potential to increase anthropogenic disturbances associated with increased traffic, noise, lighting, predation from pets, and pest plants establishment from garden waste. Such disturbances could reduce the quality of retained or enhanced vegetation as habitat for native species, and a deterrent of nesting, roosting, and foraging.

The effect of such disturbances will depend on the extent of natural habitat retained and enhanced and the buffer that this provides to these effects. The plan change anticipates the existing vegetation within the site area will remain, and further enhancement of terrestrial and riparian areas will be undertaken. It is considered this will result in large continuous areas of vegetated habitat (42.9 ha of restoration planting across the site (not including the original 10.1 ha of pre-existing vegetation), providing a degree of resilience to the retained and enhanced vegetation and any associated fauna. No vegetation removal is anticipated to accommodate the increased lot yield.

The majority of the additional residential lot yield sought by the plan change occurs within the northern and western portion of the site, rather than dispersed throughout the site and the areas of vegetation and planned enhancement (with the exception of several low-density lifestyle lots). The additional lot yield sought by the plan change also occurs largely within the areas anticipated for residential development under the existing KDC Outline Development Plan (with the exception of the western portion of the site which was previously shown as Open Space/Grazing on the KDC Outline Development Plan). Overall, the magnitude of effect of the increased lot yield is considered to be **Low**, being discernible change from the baseline condition (considering the development anticipated by the existing KDC Outline Development Plan). That is to say that there will be an increase in the number of residential lots, the effects on fauna and flora from the increased traffic, noise, lighting, predation from pets, and pest plants is expected to be a discernible from that afforded to the existing development enabled by the KDC Outline Development Plan; however, the underlying character and composition from that existing baseline condition would remain similar to from that afforded to the existing development enabled by the KDC Outline Development Plan

It is noted that the inclusion of the additional low-density lifestyle lots in locations that were previously anticipated to provide restoration planting enables the distribution of the restoration planting that is not to be vested to KDC to be owned and managed by a small number of larger lots.

A low magnitude of effect results in a **Low** overall level of effect across all of the ecological features assessed.

4.2. Alternative Native Planting Restoration Management Plan

The original NPRMP (dated 6 December 2004) anticipated the restoration planting of 51.3 ha including:

- 5.4 ha of wetland planting,
- 7.1 ha of riparian planting,
- 38.8 ha of dryland planting.

Approximately 26.7 ha of restoration planting has been established to date (6.1 ha of wetland / riparian planting and 20.6 ha of dryland planting). This provides in the order of 52% of the planting anticipated by the original NPRMP. A further 10.1 ha of pre-existing vegetation (not part of the restoration planting) is also present on the site.

The original NPRMP stated that the wetland areas for stormwater management would be vested to KDC as Local Purpose Reserve (Utility), with the dryland planting held in a single title. However, the long-term ownership of the dryland planting was 'undecided'. The KDP standards also seek the dryland planting to be held in a single title.

The objectives of the original NPRMP included:

- Mitigating the visual effects of residential development,
- Protecting the existing remnant patches of native vegetation,
- Restoring/reestablishing native vegetation and associated ecosystems,
- Filtering of runoff into the ephemeral streams.

The operative Kaikoura District Plan (KDP) includes the DEV2 chapter for the Ocean Ridge development. This chapter of the KDP includes the Outline Development Plan 1 (Appendix 1 of the DEV2 chapter). The Outline Development Plan (ODP) is referred to within the DEV2 chapter as well as the Subdivision chapter which outlines the Native Planting Area Standards.

The ODP shows 47.3 ha of proposed planting including:

- 15.5 ha of wetland planting,
- 31.8 ha of dryland planting,

These areas differ slightly from those shown in the 2004 NPRMP. Direct comparison between the 2004 NPRMP and the ODP is difficult given the ODP:

- groups the predevelopment vegetation within dryland planting area,
- includes wetland planting in areas that are not delineated as wetland,
- does not include the residential native planting area.

The alternative NPRMP was developed to support the plan change. The planting extents are presented in Appendix 1. The alternative NPRMP includes planting of a further 18.7 ha including:

- 6.0 ha wetland planting,
- 1.5 ha riparian planting,
- 8.7 ha dryland planting,
- 2.5 ha infill / enrichment planting of existing planted areas.

The Alternative NPRMP was developed through an iterative process seeking to maximise the ecological benefits of the restoration planting, achieving the objectives of the original NPRMP, and enabling the development form and yield sought by the plan change. As noted above, the majority of the additional residential lot yield sought by the plan change does not occur in areas originally planned for enhancement, except for several low-density lifestyle lots. Low density residential planting areas have been included in the dryland planting totals as a legacy from the Original NPRMP.

A comparison map showing the 2010 ODP and 2025 ANPRMP planting extents is provided in Appendix 1.

While the total area of restoration planting is reduced from that anticipated from the original NPRMP, this is counterbalanced by aspects of the alternative plan that support improved ecological outcomes and a greater level of confidence in the successful establishment and health of the restoration planting, including:

- Increased density of planting: Planting density has been increased from 2,500 plants/ hectare (1 plant /4 m²) to 5,100 plants/ hectare (1 plant/1.96 m²). The increased plant density allows for rapid canopy closure which has the following benefits:
 - reducing the chance of invasive weed invasion,
 - reducing summer water stress,
 - reducing frost intensity,
 - reducing effects of wind and cold.
- Alternative species selection: plant selection has been adapted to capture the learnings from the early plantings, increase survival, increase biodiversity, and suppress weeds.
- Infill and enrichment planting of previously planted areas: It was anticipated that secondary enrichment species would naturally regenerate via bird dispersal through the planted areas which was not observed. To assist the secondary restoration process, an enrichment / infill planting zone, has been included. The purpose of this zone is two-fold:
 - infill areas where plant establishment has been low to prevent weed establishment
 - introduce more biodiversity through the existing plantings with slower growing canopy species which are better adapted to growing once some shelter has been created from the existing planting.
- Increased duration of maintenance: The maintenance period has been increased from 2 years following the completion of planting to 5 years. This is to protect the plantings from the establishment of pest plants including invasive vine species blackberry and old man's beard which were observed across the site and is in line with current best practice.
- Increased certainty of ownership and ongoing maintenance: The ownership of the plantings has been changed from being included in a single title with no defined responsibility for the ongoing maintenance to protecting the plantings that fall within each of the larger lot property boundaries via a consent notice on each title. The plantings are to be maintained by those residents in accordance with the alternative NPRMP. Distributing the responsibility of ongoing maintenance to several of the larger lifestyle properties is considered an appropriate approach. The approach provides for certainty of the ownership and responsibility of maintenance while distributing this across a small number of properties. This is considered a preferred outcome to the vegetation being included within a single title and either conferring an onerous maintenance requirement to a single landowner or alternatively adding administrative and monitoring/enforcement complexity with the use of a body corporate style approach.

The implementation of the alternative NPRMP would result in a total of 42.9 ha of restoration planting across the site (not including the original 10.1 ha of pre-existing vegetation) or the 2.5 ha of infill / enrichment planting to be undertaken within the 26.7 ha of restoration planting completed to date. This represents approximately 8.4 ha (or 16.4 %) less area planted than anticipated by the original NPRMP. It represents approximately 4.4 ha (or 9.3%) less area planted than anticipated by the 2010 ODP proposed restoration area.

The amount of wetland buffer and riparian margin planting, thus the magnitude of effect on the wetlands and streams within the site from the alternative restoration planting is anticipated to be **Negligible**.

The reduction in dryland restoration planting anticipated predominantly occurs to the west of the Highgate area. The loss of opportunity resulting in a greater perimeter to area ratio compared to the original NPRMP, resulting in a greater influence of edge effects. As noted above, this is counterbalanced by other positive aspects of the alternative plan, such that the overall level of effect on the remaining vegetation, and habitat for avifauna, is assessed as **Low**. Given Waiharakeke grass skink are the most likely herpetofauna to be present and that their preferred habitat includes sunlit forest edges rather than shaded forest interiors, the magnitude of effect on herpetofauna has been assessed as **Negligible**.

4.3. Alternative Stormwater Management Approach

It is understood that with the increased lot yield and residential lot layout sought by the plan change, an alternative stormwater management approach will be required. Stormwater discharges can be conceptually separated into two different types of potential effects: hydrological (water quantity) and the effects on water quality in the receiving environment. While detailed design on stormwater management will accompany future resource consent applications, the following sections of the EclA serves to demonstrate that the adverse ecological effects of stormwater discharge can be appropriately managed.

4.3.1. Water Quantity

Frequent Flow Hydrology

An increase in impervious surfaces arising from urban development, when not otherwise managed, can lead to increased 'flashiness' (increased flow rate and volume, in small frequent events and lower base flows to downstream reaches). Increased flashiness can lead to an increased risk of erosion and scour, and impact on aquatic species. Additionally, a reduction in baseflow has the potential for downstream reaches to become drier. Unmanaged, could result in the wetlands being drier for longer periods of the year, allowing a shift in the vegetation to species with a fidelity for drier environs and potentially invasion by pest species. These water quantity impacts are separate from the low frequency flood mitigation measures which typically do not consider the quantity of runoff but rather the flowrate of this during large infrequent rainfall events. Management of potential changes in frequent flow hydrology is typically achieved through reducing the area of connected impervious landcover, promoting infiltration to ground, rainwater capture/ reuse, extended detention or a combination of these methods.

Flood Mitigation

The anticipated stormwater quantity management approach includes the placement of flood mitigation structures (weirs and/or culverts) to support detention/attenuation of flows to manage potential for downstream flooding.

The placement of these structures has been chosen to avoid any structure within the footprint of a natural wetland area. The design allows 'base flow' to flow through the structure (it is anticipated that the

structures will pass up to 90% of rain events without attenuation), thus reducing the potential for downstream waterbodies becoming dryer. Furthermore, stormflows that are attenuated by the control structures will be discharged over a relatively short period of time (the stormwater modelling indicates that increased flood storage in a 100-year event will be discharged within an additional approximately 1 to 15 hours of the predevelopment scenario (depending on the specific asset)).

Based on the proposed design, it is not anticipated that, with appropriate management of stormwater prior to discharge into the waterway, the proposed flood mitigation structures will cause any more than a slight change from the existing baseline condition of the downstream wetland areas regarding hydrology, wetland extent, ecological value of vegetation community assemblages. Therefore, the magnitude of effects has been assessed as **Negligible**.

Furthermore, due to the structures being designed to only engage larger and more intense rain events, and the relatively short additional periods the attenuated water will be retained, it is not anticipated that the placement of the proposed flood mitigation structures will have more than a slight change from the existing baseline condition on the upstream environments.

4.3.2. Water Quality

The building material used, and the type of activities undertaken can also generate a range of contaminants that can be mobilised and discharged via stormwater. Both point source and diffuse discharges from urban activities, can affect freshwater quality and ecosystem health.

With impervious surfaces replacing the current agricultural land use in place, there would be a shift from common agricultural contaminants such as nitrogen and phosphorus to a more urban contaminant profile, particularly zinc, copper and temperature.

As noted above the design of the water quantity control structures allows water to be detained over a relatively short period of time. Thus, reducing any potential for increased temperature as a result of the temporary impoundment of the water during flood events. Changes in stormwater quality during small frequent rainfall events (up to 3-month Annual Return Interval (ARI) storm event) should be appropriately managed prior to discharge into the waterway corridors as part of development design and future resource consenting.

Further design work will need to be undertaken at the time of detail design and resource consenting, however, design solutions are available to manage water quality effects, if necessary, such as the use of raingardens, vegetated swales, infiltration, stormwater wetlands, litter/debris traps and/or rainwater reuse.

With stormwater quality management solution implemented it is considered changes to water quality would be managed such that there would be no more than a slight change from the existing baseline condition (noting there will be a shift in contaminant profile). Therefore, the magnitude of effects has been assessed as **Negligible**.

A negligible magnitude of effect from stormwater effects results a **Very Low** overall level of effect across all of the ecological features assessed.

4.3.3. Fish Passage

While detailed design of the water quantity control structures will form part of future resource consent applications, it is anticipated that achieving the permitted activity standards of the National Environmental Standards for Freshwater (**NES:F**) regarding fish passage will be constrained by the design

objective to manage water quantity. In particular, the NES:F permitted standards relating to culver diameter relative to channel width may not be able to be achieved within the design constraints. However, it is noted what initial designs propose to replace at least two existing culverts with culverts of increased diameter (flood control structures 'x' and 'y' as labelled on the Fraser Thomas plans).

However, it is considered that the provision of fish passage as per the NES:F permitted activity standards is not warranted with regard to the water quantity control structures; due to:

- The NES:F standards cover all species, the freshwater fish identified within the catchment was limited to the Not Threatened upland bully, which is non-migratory.
- There is limited aquatic habitat present upstream of the structures:
 - Flood control structure 'v': 115 linear m of permanent or intermittent stream.
 - Flood control structure 'w': 3,825 m² of wetland and 185 linear m of permanent or intermittent stream.
 - Flood control structure 'x': 4,979 m² of wetland and, 120 linear m of permanent or intermittent stream.
 - Flood control structure 'y': 1,625 m² of wetland and 95 linear m of permanent or intermittent stream.
 - Flood control structure 'z': 80 linear m of permanent or intermittent stream.
- The catchment having limited, or no, wetted connection to the coast. The catchment drains to a culvert under SH1 and then the stream discharges to beach gravels. This limits the connection for migratory freshwater fish species into the catchment.

Furthermore, designing the structures to meet the NES:F permitted activity standards may result in perverse outcomes from an ecological perspective in this site specific context. I.e. designing a 1:30 slope downstream of a weir structure may have adverse effects on the wetland environments.

While a more detailed assessment will be required at the time of detailed design and resource consenting, it is anticipated that, given the site specific matters discussed above, and the potential design solutions available, that the magnitude of effect on fish passage will be no more than **Low**.

A Low magnitude of effect, with a Low ecological value, results in a **Very Low** overall level of effect.

4.4. Earthworks

While detailed design of erosion and sediment controls will accompany future resource consent applications, this section of the EclA serves to demonstrate that the adverse ecological effects of erosion and sediment discharge can be appropriately managed.

The increased lot yield sought by the plan change will require increased earthworks to prepare the building platforms, roads, accessways, and services. For all land disturbance activities, there is a risk of uncontrolled sediment discharge to the receiving environment. Sediment is a contaminant as defined in the RMA and has the potential to cause a range of adverse effects in the receiving environment. Fine particulate sediment can clog the interstitial spaces between hard substrates such as wood and cobbles, altering habitat complexity. Suspended sediment can clog fish and macroinvertebrate gills, increasing disease susceptibility and mortality rates. The increased turbidity associated with both acute and chronic suspended sediment can indirectly affect fish behaviour via impaired vision, with long term effects on feeding, reproduction, and mortality. Sediment discharge to receiving waters can impact water quality, including physio-chemical indicators pH and clarity.

The use of sediment controls during earthworks would also have the potential to alter the hydrological regime of downstream wetland areas. The temporary impoundment and/or diversion of surface flows, for treatment, may delay and or reduce flows reaching the wetland areas. This temporary impoundment of flows, to allow for suspended sediment to fall out of suspension, is counter-balanced by the reduction in the volume of sediment that would otherwise be discharged to the wetland areas. Appropriate design of erosion and sediment control measures including staging and placement controls can minimise any adverse effects.

With appropriate industry best practice erosion and sediment controls, the magnitude of any impact within the watercourses within the site would be **Negligible**. Given the existing unnatural accumulation of soft sediments, and indicators of nutrient enrichment, it is unlikely to be a change from the current ecological conditions. Any sediment discharges from construction stormwater will need to be authorised via resource consent from Environment Canterbury, which provides the appropriate mechanism for management measures to be finalised.

A negligible magnitude of effect from stormwater effects results a **Very Low** overall level of effect across all of the ecological features assessed.

4.5. Streamworks

While detailed design for any streamworks will accompany future resource consent applications, this section of the EclA serves to demonstrate that the adverse ecological effects of streamworks can be appropriately managed.

As noted above, the proposed stormwater management approach includes the placement of flood mitigation structures within watercourses. There may also be a need to upgraded culverts, placement of new culverts with associated inlet and outlet structures and upgraded drainage and/or stormwater management infrastructure.

Works within the waterbodies have the potential to result in direct injury and mortality to freshwater fauna during construction works. Direct effects on native freshwater fish would be assessed at the time of resource consenting for the development, however, can be managed through the provision and implementation of a Native Fish Capture and Relocation Plan (**NFCRP**), if required. Following the provision and implementation of a NFCRP, it would be anticipated that direct injury and mortality to freshwater fauna would be reduced to where the magnitude of effect would be **Negligible**.

Indirect effects, such as the potential for a spill or discharge of construction materials to a watercourse, could have an impact on the physiochemical composition of the stream. The exact magnitude would be dependent on the nature and volume of any discharge, the most probably risk is from the use of concrete or grouts used in construction.

Spills and discharges can be managed through the construction methodology and conditions of consent at the time of resource consenting. Management would likely require temporary damming of stream reaches and over-pumping during works, timing of works to coincide with minimal stream flows/water levels (where practicable with fishing considerations), operating machinery outside the wetted width of the waterbody, ensuring any refuelling is undertaken within an appropriate setback distance from waterways, and maintaining a spill kit onsite and training staff in its use. With the above outlined management measures, the magnitude of effect on freshwater fauna, would be expected to be **Low**.

A Low magnitude of effect, along with the Low ecological value of aquatic fauna, results a **Very Low** overall level of effect.

Table 16: Magnitude and level of effect

Impact	Ecological feature / fauna	Nature of effect	Ecological Value	Magnitude of effect	Level of effect
Plan Change Replated Effects					
Increased Lot Yield	Vegetation	Increased pest plant risk	Negligible to Moderate	Low	Low
Increased Lot Yield	Herpetofauna	Increased disturbance and predation risk	High	Low	Low
Increased Lot Yield	Avifauna	Increased disturbance and predation risk	Low	Low	Very Low
Increased Lot Yield	Wetlands	Increased pest plant risk	Moderate	Low	Low
Increased Lot Yield	Watercourses	Increased pest plant risk	Low	Low	Very Low
Alternative NRPMP	Vegetation	Reduced dryland planting area (particularly to the west of Highgate) and impacts from edge effects relative to opportunity anticipated.	Negligible to Moderate	Low	Low
Alternative NRPMP	Herpetofauna	Reduced dryland planting area (particularly to the west of Highgate) and habitat relative to opportunity anticipated	High	Negligible	Very Low
Alternative NRPMP	Avifauna	Reduced dryland planting area (particularly to the west of Highgate) and habitat relative to opportunity anticipated	Low	Low	Low

Impact	Ecological feature / fauna	Nature of effect	Ecological Value	Magnitude of effect	Level of effect
Alternative NRPMP	Wetlands	No reduction in wetland and buffer planting	Moderate	Negligible	Very Low
Alternative NRPMP	Watercourses	No reduction in riparian planting	Low	Negligible	Very Low
Future Resource Consenting Related Effects – Indicative Assessment Only					
Alternative SW management approach	Watercourses	Altered hydrology and water quality impacts	Low	Negligible	Very Low
Alternative SW management approach	Wetlands	Altered hydrology and water quality impacts	Moderate	Negligible	Very Low
Alternative SW management approach	Aquatic Fauna	Altered hydrology and water quality impacts	Low	Negligible	Very Low
Fish Passage	Aquatic Fauna	Impacts on fish passage	Low	Low	Very Low
Earthworks	Watercourses	Discharge of sediment	Low	Negligible	Very Low
Earthworks	Wetlands	Discharge of sediment	Moderate	Negligible	Very Low
Streamworks	Aquatic Fauna	Injury or mortality and construction contaminant discharge	Low	Low	Very Low

5. Conclusion and Effects Management

Based on the assessment above, the various ecological effects of the increased lot yield and alternative Native Restoration Planting Management Plan sought by the plan change result in no more than a Low level of effect. Therefore, further effects management is not considered necessary to address any ecological effects of the plan change.

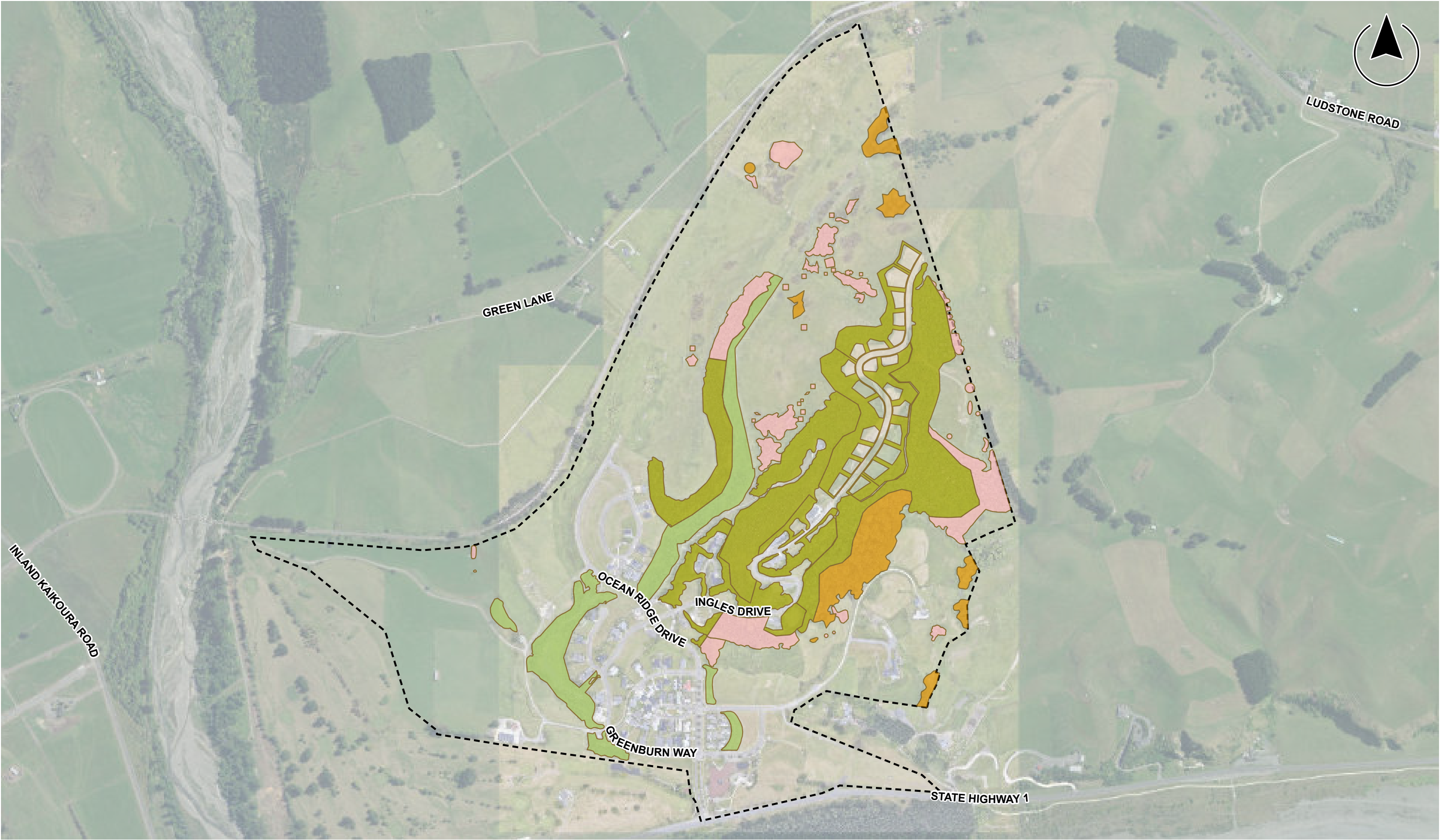
Furthermore, the assessment above demonstrates that future anticipated resource consenting matters, such as earthworks, streamworks, and stormwater discharges, can be appropriately managed at the time of resource consenting.

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Appendix 1 Maps

OCEAN RIDGE VEGETATION TYPES AND EXTENT



Verified Existing Vegetation

- Riparian/Wetland Planting
- Dryland Planting
- Kanuka scrub and scrubland
- Mixed shelter belt treeland

[- - -] Ocean Ridge Development Area

Client CARGILL STATION LIMITED
Project OCEAN RIDGE PPC ECIA

0 250 500 m

Project no. P05100
Date 22 Apr 2025

Drawn PZ
Approved ML

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OCEAN RIDGE WETLAND AND WATERCOURSE LOCATION AND EXTENT



- Artificial Drain
- Ephemeral Watercourse
- Intermittent / Permanent Watercourse
- Natural Inland Wetland
- SW Detention Pond (Resource Consent CRC060153, 2005)
- Ocean Ridge Development Area

Client **CARGILL STATION LIMITED**
Project **OCEAN RIDGE PPC ECIA**

Project no. **P05100**
Date **05 Aug 2025**

0 250 500
m

Drawn **JT**
Approved **ML**

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OCEAN RIDGE ALTERNATIVE PLANTING RESTORATION PLAN OVERVIEW



Verified Existing Vegetation

- Riparian/Wetland Planting
- Dryland Planting
- Low Density Residential Planting
- Predevelopment Vegetation

Ocean Ridge Alternative Planting Restoration Plan 2025

- Wetland & Wetland Bank Planting 6.0 ha
- Riparian Planting 1.5 ha
- Dryland Planting 8.7 ha

6000m2 of infill dryland planting anticipated pending discussion with council regarding active recreation reserve area and Transpower regarding safe separation distances. Detailed planting area to be provided during consenting stage once these discussions have been held and planting area finalised.

Client CARGILL STATION LIMITED
Project OCEAN RIDGE PPC

0 250 500 m

Project no. P05039
Date 06 Nov 2025

Drawn JT
Approved ML

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OCEAN RIDGE WETLAND DELINEATION POINTS - WETLAND 1 AND 2



- Wetland?
- Yes
 - No
- Artificial Drain
- Intermittent / Permanent Watercourse
- Natural Inland Wetland

Client **CARGILL STATION LIMITED**
Project **OCEAN RIDGE PPC ECIA**

0 60 120 m

Project no. **P05100**
Date **05 Aug 2025**
Drawn **JT**
Approved **ML**

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OCEAN RIDGE WETLAND DELINEATION POINTS - WETLAND 3



Wetland? Natural Inland Wetland

● Yes

● No

Client **CARGILL STATION LIMITED**

Project **OCEAN RIDGE PPC ECIA**

Project no. **P05100**

Date **05 Aug 2025**

0 25 50
m

Drawn **JT**

Approved **ML**

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OCEAN RIDGE RESTORATION PLANTING PLAN COMPARISON 2010 & 2025



- Ocean Ridge Alternative Planting Restoration Plan 2025 **16.2 ha + additional 2.5 ha of infill in existing planted areas**
- Verified Existing Planting **26.7 ha**
- Operative 2010 ODP Restoration Areas **47.3 ha**
- Ocean Ridge Development Area

Direct comparison with the ODP restoration areas is difficult given the ODP:
•groups the predevelopment vegetation within the dryland planting area,
•does not include all of the residential native planting area.

Client **CARGILL STATION LIMITED**
Project **OCEAN RIDGE PPC**

Project no. **P5100**
Date **06 Nov 2025**

Drawn **JT**
Approved **ML**



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Appendix 2 Assessment of Effects Methodology

Table 17: Assigning value to species, vegetation, and habitats (summarised from EIANZ, 2018)

Value	Species Values	Vegetation/Habitat Values
Very High	Nationally threatened	Supporting more than one national priority type. Nationally threatened species found or likely to occur there, either permanently or occasionally.
High	Nationally at risk – Declining	Supporting one national priority type or naturally uncommon ecosystem. At risk, declining species found or likely to occur there, either permanently or occasionally.
Moderate - High	Nationally At Risk – recovering, relict, or naturally uncommon	Other at risk species found or likely to occur there, either permanently or occasionally.
Moderate	Locally uncommon. Rare, not nationally threatened or at risk	Locally rare or threatened, supporting no threatened or at risk species
Low	Not threatened nationally, common locally	Nationally and locally common, supporting no threatened or at risk species
Negligible	Exotic species, including pests, species having recreational value	Exotic, supporting exotic species

Table 18: Criteria for describing magnitude of effect (summarised from EIANZ, 2018)

Magnitude	Description
Very High	Total loss of or major alteration to key features of the baseline condition causing a fundamental change or complete loss of the character, composition, or attributes of the site.
High	Major loss or major alteration to key features of the baseline condition causing a fundamental change of the character, composition, or attributes of the site.
Moderate	Loss or alteration of one or more key features of the baseline condition causing a partial change to the character, composition, or attributes of the site.
Low	Minor shift away from baseline conditions. Change may be discernible, but underlying character, composition, or attributes of the site will be similar to pre-development.
Negligible	Very slight change from existing baseline condition. Change barely distinguishable.

Table 19: Criteria for describing level of effects (from EIANZ, 2018)

Ecological Value Magnitude	Very High	High	Moderate	Low	Negligible
Very High	Very High	Very High	High	Moderate	Low
High	Very High	Very High	Moderate	Low	Very Low
Moderate	High	High	Moderate	Low	Very Low
Low	Moderate	Low	Low	Very Low	Very Low
Negligible	Low	Very Low	Very Low	Very Low	Very Low
Positive	Net Gain	Net Gain	Net Gain	Net Gain	Very Low

Table 20: Interpretation of effects against standard terms (modified from EIANZ, 2018)

Level of effect	Interpretation	
Very High	Unacceptable adverse effects	Extensive adverse effects that cannot be avoided, remedied, or mitigated
High	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
Moderate	More than minor	Adverse effects that are noticeable and may cause an adverse impact but could be potentially mitigated or remedied
Low	Minor adverse effects	Adverse effects that are noticeable but that will not cause any significant adverse impacts
Very Low	Not more than minor adverse effects	Adverse effects that are discernible day to day effects but too small to adversely affect the environment or other persons
Nil	Nil effects	No effects at all

Appendix 3 CRPS Significance Criteria

Regional Policy Statement / APPENDIX 3 – Criteria for determining significant indigenous vegetation and significant habitat of indigenous biodiversity

APPENDIX 3 - Criteria for determining significant indigenous vegetation and significant habitat of indigenous biodiversity

CRITERIA FOR DETERMINING SIGNIFICANT INDIGENOUS VEGETATION AND SIGNIFICANT HABITAT OF INDIGENOUS BIODIVERSITY

Representativeness

1. Indigenous vegetation or habitat of indigenous fauna that is representative, typical or characteristic of the natural diversity of the relevant ecological district. This can include degraded examples where they are some of the best remaining examples of their type, or represent all that remains of indigenous biodiversity in some areas.
2. Indigenous vegetation or habitat of indigenous fauna that is a relatively large example of its type within the relevant ecological district.

Rarity/Distinctiveness

3. Indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the region, or relevant land environment, ecological district, or freshwater environment.
4. Indigenous vegetation or habitat of indigenous fauna that supports an indigenous species that is threatened, at risk, or uncommon, nationally or within the relevant ecological district.
5. The site contains indigenous vegetation or an indigenous species at its distribution limit within Canterbury Region or nationally.
6. Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, occurs within an originally rare ecosystem, or has developed as a result of an unusual environmental factor or combinations of factors.

Diversity and Pattern

7. Indigenous vegetation or habitat of indigenous fauna that contains a high diversity of indigenous ecosystem or habitat types, indigenous taxa, or has changes in species composition reflecting the existence of diverse natural features or ecological gradients.

Ecological Context

8. Vegetation or habitat of indigenous fauna that provides or contributes to an important ecological linkage or network, or provides an important buffering function.
9. A wetland which plays an important hydrological, biological or ecological role in the natural functioning of a river or coastal system.
10. Indigenous vegetation or habitat of indigenous fauna that provides important habitat (including refuges from predation, or key habitat for feeding, breeding, or resting) for indigenous species, either seasonally or permanently.

Appendix 4 Five Minute Bird Counts

FIVE MINUTE BIRD COUNT STANDARD DATA FIELD FORM

Observer	KM, JS	Date	25/02/2025	General location	Top of Ingles Drive	Specific location	100 m into Dryland Planting
Line number	1						
Station number							
Grid ref (Easting, 7 digits)	173.648933						
Grid ref (Northing, 7 digits)	-42.406551						
Start time (24 hour)	09:00						
Temperature (1-6)	5						
Wind (0-3)	1						
Other noise (0-2)	0						
Sun (minutes)	5						
Precipitation type (N,M,R,H,S)	N						
Precipitation value (0-5)	0						

[illegible]

Sun (0-5) Record approximate duration, in minutes, of bright sun on the canopy immediately overhead

Time 24 hour clock, at the beginning of each count

Temperature

1	freezing	< 0°C
2	cold	0-5 °C
3	cool	6-10 °C
4	mild	11-15 °C
5	warm	16-22 °C
6	hot	> 22 °C

Wind The average for each five-minute count on a modified Beaufort scale:

- 0** Leaves still or move without noise (Beaufort 0 and 1)
- 1** Leaves rustle (Beaufort 2)
- 2** Leaves and branches in constant motion (Beaufort 3 and 4)
- 3** Branches or trees sway (Beaufort 5, 6 and 7)

Seen and Heard

Birds that are first heard should be entered under **H** (even if they are later seen), birds that are first seen should be entered under **S**. Adding H and S should give the total number of birds observed

Unbounded Counts are unbounded

Other Noise i.e. Other than wind
the average for the five minutes
0 not important
1 moderate
2 loud

Precipitation type
Average for each count
N None
M Mist
R Rain
H Hail
S Snow

Precipitation value

- 0 None
- 1 Dripping foliage
- 2 Drizzle
- 3 Light
- 4 Moderate
- 5 Heavy

FIVE MINUTE BIRD COUNT STANDARD DATA FIELD FORM

Observer	KM, JS	Date	25/02/2025	General location	Access road between Wetland 1 and 5	Specific location	Adjacent to wetland planting
Line number	1						
Station number							
Grid ref (Easting, 7 digits)	173.639742						
Grid ref (Northing, 7 digits)	-42.409614						
Start time (24 hour)	12:00						
Temperature (1-6)	6						
Wind (0-3)	1						
Other noise (0-2)	0						
Sun (minutes)	5						
Precipitation type (N,M,R,H,S)	N						
Precipitation value (0-5)	0						

[illegible]

Sun (0-5) Record approximate duration, in minutes, of bright sun on the canopy immediately overhead

Time 24 hour clock, at the beginning of each count

Temperature

1	freezing	< 0°C
2	cold	0-5 °C
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Precipitation value

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