

**BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED BY THE
WAIMAKARIRI DISTRICT COUNCIL**

IN THE MATTER OF

The Resource Management Act 1991 (**RMA** or
the Act)

AND

IN THE MATTER OF

Hearing of Submissions and Further
Submissions on the Proposed Waimakariri
District Plan (**PWDP** or **the Proposed Plan**)

AND

IN THE MATTER OF

Hearing of Submissions and Further
Submissions on Variations 1 and 2 to the
Proposed Waimakariri District Plan

AND

IN THE MATTER OF

Submissions and Further Submissions on the
Proposed Waimakariri District Plan by **Mike
Greer Homes NZ Limited**

**EVIDENCE OF LYDIA JANE SPRINGFORD METCALFE
ON BEHALF OF MIKE GREER HOMES NZ LIMITED REGARDING HEARING
STREAM 12E**

DATED: 5 March 2024

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INTRODUCTION

- 1 My name is Lydia Jane Springford Metcalfe.
- 2 I hold the degrees of a Bachelor of Science (Ecology) from the University of Otago and a Postgraduate Diploma in Wildlife Management from the University of Otago.
- 3 I hold the position of Ecologist at Wildland Consultants Ltd, based in Dunedin. I have been employed as an Ecological Consultant since June 2021. My work as an ecological consultant has included ecological significance assessments throughout Southland, Otago and parts of Canterbury. I have also undertaken a number of assessments of ecological effects relating to proposed developments and land use change. I have surveyed and delineated wetlands across Southland and Otago, establishing over 60 wetland delineation plots during this work.
- 4 I have been employed fulltime in ecological and conservation roles since graduating in 2015, as well as during my studies. I worked as a field botanist and team leader for the Department of Conservation for over six years, undertaking the measurement and establishment of permanent 20m x20m vegetation plots throughout New Zealand. This included plots for the Department of Conservation's Tier 1 monitoring program and Land Use and Carbon Analysis System (LUCAS). The vegetation measured in these plots spanned habitats on both public and private land, encompassing many different habitat types from high alpine to gravel river beds and coastal wetlands. Within this role I also undertook surveys to measure and understand the impact of pest animals on vegetation and a wide range of other biodiversity monitoring work. I have also worked in habitat restoration, enhancing, and restoring ecological values in and around Christchurch and Banks Peninsula.
- 5 My role in relation to the Waimakariri Proposed District Plan and Variation 1 is as an independent expert witness to on ecological matters. Specifically relating to the ecological values associated with indigenous flora and fauna that is present or potentially present on the site. This includes assessments of vegetation, wetlands and drains as well as desktop assessments for freshwater fish and invertebrates, lizards and avifauna.

- 6 Although this is not an Environment Court proceeding I have read the Environment Court's Code of Conduct and agree to comply with it. My qualifications as an expert are set out above. The matters addressed in my evidence are within my area of expertise, however where I make statements on issues that are not in my area of expertise, I will state whose evidence I have relied upon. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.

SCOPE OF EVIDENCE

- 7 In my evidence I address the following issues:
- (a) The existing vegetation and habitats, including waterways and wetlands present on the site.
 - (b) Ecological values and ecological significance.
 - (c) A brief assessment of the how biodiversity values may potentially be affected by rezoning and subsequent subdivision and development.

SUMMARY OF MY EVIDENCE

- 8 A site visit was undertaken to determine the vegetation and habitat types present, identify any wetlands and assess the ecological value of the drain present on the site. Desktop assessments were undertaken for lizards, birds and freshwater fish and invertebrates.
- 9 Vegetation is predominantly exotic and two wetland habitats were delineated on the site. One wetland is outside of the proposed development area and the other is located within the Stormwater Management Area, the proposed development is not expected to have a negative impact on these wetlands. The drain present on the site does not contain important ecological values.
- 10 Desktop fauna assessments have indicated that At Risk avifauna and lizards may utilize some habitats present on the site, which means that despite the low value of vegetation, some habitats may meet ecologically significance criteria if these species are detected onsite.
- 11 The potential presence of At-Risk species is unlikely to constrain development, indigenous avifauna are unlikely to be negatively impacted by the proposal, and any effects to lizards could be managed via a Lizard Management Plan.

- 12 The inclusion of indigenous riparian planting will add ecological benefits to the site.

CONTEXT

- 13 Mike Greer Homes NZ Limited have submitted an application to the Waimakariri District Council to rezone approximately 50 hectares of pastoral farmland land to the south of Kaiapoi, from Rural Lifestyle Zone (RLZ) to Medium Density Residential Zone (MRZ).
- 14 The proposed rezoning site is located on Main North Road, which forms the western boundary, with the Northern Trunk Railway Line on the eastern boundary. To the north is the Kaikainui Stream, and on the southern boundary is Courtenay Stream. An Outline Development Plan (ODP)¹ has been proposed for the site, with open space reserves along the two stream boundaries and a stormwater management reserve on the eastern railway boundary.

METHODS

- 15 A site visit was undertaken on 18 January 2024 and surveyed for terrestrial vegetation and wetlands. All vegetation and habitat types were described and mapped following the structural classes outlined in Atkinson (1985)². Potential natural inland wetland areas were assessed and delineated where present, using methods and definitions in, or referred to, in the National Policy Statement for Freshwater Management (NPS-FM)³, including MFEs Pasture exclusion methodology⁴ and Clarkson wetland delineation methodology (2013)⁵, which are described in detail in Appendix 4 below. Field mapping was digitised onto aerial imagery using ArcGIS. All vascular plant species observed are listed in Appendix 2. Incidental avifauna observations were also recorded, although targeted fauna surveys were not undertaken.

¹ Dave Lovell Smith 2024: South Kaiapoi Outline Development Plan R4.

² Atkinson I.E. 1985: Derivation of vegetation mapping units for an ecological survey of Tongariro National Park, North Island, New Zealand. *New Zealand Journal of Botany* 23: 361-378

³ Ministry for the Environment 2020: National Policy Statement for Freshwater Management 2020. Wellington: Ministry for the Environment. 70 pp

⁴ Ministry for the Environment 2022: Pasture exclusion assessment methodology. Wellington: Ministry for the Environment. 51 pp.

⁵ Clarkson B. 2013: A vegetation tool for wetland delineation in New Zealand. Manaaki Whenua Landcare Research Contract Report LC1793

- 16 A separate site visit was undertaken by Senior Freshwater Ecologist Stella McQueen on the 29 January 2024 to assess the freshwater habitats present on the site, this information is also provided in this evidence.
- 17 A desktop assessment was undertaken to determine the known ecological values of the site, including assessing recent and historical aerial imagery, survey records (Canterbury black maps⁶) and reviewing database records. Online databases (eBird⁷, DOC Bioweb Herpetofauna database, New Zealand Freshwater Fish Database⁸) were searched for information on fish, lizard, bird, and vegetation values within and around the site. Lizard records were searched within a 20 kilometre radius, while eBird records were restricted to a one kilometre radius of the site and recorded between 1 January 2019 to 31 October 2023.
- 18 Following the site visits and desktop assessments, the ecological significance of vegetation and habitat types present within the site were assessed against the criteria outlined in the Canterbury Regional Policy Statement (CRPS Appendix 3), which has identical criteria to that in the proposed Waimakariri District Plan (pWDP). Ecological significance was also assessed against criteria in Appendix 1 of the National Policy Statement on Indigenous Biodiversity.

THE RECEIVING ENVIRONMENT

Ecological Context

- 19 The site is located within the Low Plains Ecological District (ED), that covers the eastern part of the Canterbury Plains. The Low Plains ED stretches from Waipara in the north to Timaru in the south. The following description is adapted from Harding (2019)⁹.
- 20 The ED covers a sloping plain formed by the deposition of glacial outwash and recent river gravels. It extends from sea level to approximately 300 metres asl, and has no significant hills. Older surfaces are covered with loess, while younger surfaces comprise recent river gravel. The long coastline of the

⁶<https://www.arcgis.com/apps/mapviewer/index.html?layers=c5f7d946b8fb43ce80fd3441cde5b78e> accessed 9/02/2024

⁷ <https://ebird.org/explore> accessed 2-02-24

⁸ Stoffels R. 2022: New Zealand Freshwater Fish Database (extended). The National Institute of Water and Atmospheric Research (NIWA). Christchurch. Dataset downloaded January 2024 from <https://nzffdms.niwa.co.nz/search>

⁹ Harding M.A. 2009: Canterbury Land Protection Strategy. Published by the Nature Heritage Fund, Wellington

district comprises sand and sand/gravel beaches with low dunes, dune lakes, and lagoons north of Banks Peninsula.

- 21 Droughts, wind, and occasional natural fires would have strongly influenced the pre-human vegetation of Low Plains ED. The presence of only a few small remnants of indigenous vegetation in the district makes interpretation of the pre-human vegetation difficult. Early European surveyors noted the presence of areas of forest at a number of locations on the coastal plain north of Christchurch, presumably remnants of previously more-extensive forests. Intervening areas supported raupō swamp, flax swamp, swamp forest, or grassland and sparsely-vegetated gravelfield.
- 22 It is likely that the severity of the climate on the open plains, including the desiccating effect of frequent strong northwest winds and frequent natural fires, prevented the development of extensive forests. More extensive areas of podocarp forest and wetland would have been present at well-watered sites nearer the coast, such as north of Christchurch, and along river terraces. Freshwater wetlands were relatively extensive on eastern parts of the plains, and saline wetlands present along the coast.
- 23 The original vegetation of Low Plains ED has been substantially depleted and modified by human-induced fire, and land clearance for agriculture and settlement. Nearly all parts of the ED outside of Christchurch are intensively farmed. Most soils have been cultivated and many areas are irrigated. Remnants of wetland and coastal vegetation are present north of Christchurch. Only a very small part (c.1%) of Low Plains ED is protected. There appear to be few opportunities for further protection.
- 24 Based on the Black Maps¹⁰, historical survey maps which recorded vegetation zones in the period 1848-1870, the majority of the site was covered in vegetation including grass, tūpāki/tutu (*Coriaria species*) and flax (*Phormium tenax*) at that time. The main channel of the Courtenay River is mapped as flowing to the east of the site with a small section of the historic channel passing through the south east corner of the site.

¹⁰<https://ecan.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=c5f7d946b8fb43ce80fd3441cde5b78e>

THE SITE

Vegetation and Habitat Types

25 Eight terrestrial and three aquatic or wetland vegetation and habitat types were identified during the site visit. These are mainly exotic vegetation types and have been mapped and shown in Figure 1 (Appendix 3) and are described below:

1. Crack willow treeland
2. Exotic hedgerows
3. Amenity planting
4. Ripgut brome grassland
5. Ryegrass grassland
6. Lawn
7. Rank grass grassland
8. Mixed exotic grassland
9. Crack willow treeland (wetland)
10. Tall fescue-rautahi wetland
11. Drains

1. Crack willow treeland

A line of tall (c.10 meters) crack willow (*Salix fragilis*) trees runs along the southern boundary between Courtenay Stream and the paddocks, with vegetation on the upper stream banks terrestrial. Crack willow is the dominant tree but there are also scattered oak (*Quercus* species) trees. Exotic herbs and grasses are present in the ground cover including browntop (*Agrostis capillaris*) and Yorkshire fog (*Holcus lanatus*). Treeland located in the east of the site contains periwinkle (*Vinca major*), elder (*Sambucus nigra*) and harakeke (*Phormium tenax*) in the understorey.

2. Exotic hedgerows

Exotic trees form hedgerows surrounding the southern paddocks, containing eucalypts, macrocarpa (*Cupressus macrocarpa*), walnut (*Juglans* species), birch (*Betula* species) and oak.

3. Amenity planting

The garden surrounding the house contains amenity planting with a range of exotic species, including rose (*Rosa* species) agapanthus (*Agapanthus*

praecox), camellia (*Camellia japonica*) and ornamental cherry (*Prunus* species).

4. Ripgut brome grassland

The northern most paddock is currently being used for crop and is comprised nearly exclusively of ripgut brome (*Bromus diandrus*), red dead nettle (*Lamium purpureum*) and scrambling fumitory (*Fumaria muralis*) are occasionally present.

5. Ryegrass grassland

A large paddock located in the centre of the site is currently being utilised for cattle grazing. Vegetation in this area is comprised of exotic pasture species dominated by ryegrass (*Lolium perenne*) with white and red clover (*Trifolium repens*, *Trifolium pratense*) and creeping buttercup (*Ranunculus repens*). Other exotic herbs and grasses are also present at a lower abundance include browntop, Kentucky blue grass (*Poa pratensis*), broad-leaved plantain (*Plantago major*) and broad-leaved dock (*Rumex obtusifolius*).

6. Lawn

Small patches of mown lawn are present around the house in the south west of the site with lawn daisy (*Bellis perennis*), selfheal (*Prunella vulgaris*), annual poa (*Poa annua*), ryegrass, white clover and catsear (*Hypochaeris radicata*).

7. Rank grass grassland

Rank (unmown and not grazed) grassland is restricted to thin strips surrounding the site, between the fence line and the road to the west and between the fence line and railway line to the east as well as along the banks of the Kaikainui Stream. Vegetation is comprised of exotic grasses, including tall fescue (*Lolium arundinaceum*), Kentucky blue grass, ryegrass and cocksfoot (*Dactylis glomerata*). Herbs, including yarrow (*Achillea millefolium*), nodding thistle (*Carduus nutans*), red dead nettle, broad-leaved dock and scrambling fumitory are also common.



Plate 1: Rank grass grassland (foreground) beside railway line in the east of the site, adjacent to ryegrass grassland.

8. Mixed exotic grassland

The southern paddocks contain longer grass which is currently grazed by sheep. Cocksfoot, sweet vernal (*Anthoxanthum odoratum*), Yorkshire fog, browntop, crested dogstail (*Cynosurus cristatus*), white clover, red clover and dandelion (*Taraxacum officinale*).



Plate 2: Mixed exotic grassland with exotic hedgerows.

9. Crack willow treeland wetland

Lower lying areas of crack willow forest are wetland habitat, a flood channel runs through the centre of the forest and is subject to intermittent flooding. Ground cover is sparse with scattered pūkio (*Carex secta*). A range of aquatic and wetland plants are present at the edge of the stream, including mats of common water milfoil (*Myriophyllum propinquum*), field speedwell (*Veronica arvensis*), bulbous rush (*Juncus bulbosus*), jointed rush (*Juncus articulatus*) and *Hydrocotyle novae-zeelandiae*.



Plate 3: Edge of Courtenay Stream showing the ground cover within crack willow treeland wetland.

Tall fescue-rautahi wetland

A wetland is present in the south eastern corner of the ryegrass grassland paddock and extends to the edge of the crack willow treeland. This wetland comprises a mixture of indigenous and exotic grasses, rushes and sedges which are typical of wetland habitats. The exotic grasses tall fescue and creeping bent (*Agrostis stolonifera*) are abundant and the indigenous sedge, rautahi (*Carex geminata*), is a major component of the vegetation. Creeping buttercup, kneed foxtail (*Alopecurus geniculatus*), and Yorkshire fog, are common and scattered exotic and indigenous rushes are also present, including jointed rush, bulbous rush, soft rush (*Juncus effusus*) and wī (*Juncus edgariae*). An area with standing water is present along the

southern fence line, vegetation in this area includes monkey musk (*Erythranthe guttata*), *Isolepis* species, celery-leaved buttercup (*Ranunculus sceleratus*) and field speedwell (*Veronica arvensis*).



Plate 4: Southern extent of tall fescue-rautahi wetland, some pugging is present.

Drains

Two drainage channels are located within the site, one running east to west and another extending down towards Courtenay Stream. More detailed information on the character and values of the drains on the site are provided below.

WETLAND DELINEATION

- 26 The tall fescue-rautahi wetland (vegetation type 9, Appendix 3) present in the south eastern part of the site was delineated during the site visit. Four 2x2 metre wetland delineation plots were established and measured using wetland delineation protocols outlined in Clarkson (2013). All four plots were determined to be within wetland habitats, with prevalence scores under 3 and >50% cover of wetland plant species (OBL or FACW).
- 27 A simple modified hydrology test was also undertaken at each plot by digging holes beside the plot. In plots 1, 2 and 3, hydric soils were present and the holes filled with water. The tall fescue-rautahi wetland is therefore considered a wetland based on the delineation plots and hydrology tests. The NPS-FM

(2020) specifies that a wetland which *is within an area of pasture used for grazing*; and is comprised of over 50% cover of pasture species (determined using the pasture exclusion test) is excluded from the definition of an inland natural wetland. The tall fescue-rautahi wetland is located within an area which is currently grazed, however, none of the wetland delineation plots passed the pasture exclusion test and therefore the wetland is considered a natural inland wetland.



Plate 5: Hole dug at plot 2, demonstrating high water table indicating the area is a wetland.

- 28 The extent of the crack willow treeland (wetland) was determined using a walk through rapid assessment of vegetation and delineated based on the relative dominance of Obligate (OBL-almost always occurring in wetlands) and facultative wetland (FACW-usually occurs in wetlands) species. The crack willow treeland (wetland) occurs along the boundary of the Courtenay Stream (vegetation type 11, Appendix 3). This area is fenced off from stock and therefore meets the definition of a natural inland wetland.

AQUATIC HABITATS

- 29 There is one drain running through 168 Main North Road. This carries stormwater from a farm drain and Waghorn Builders on the other side of Main North Road, and discharges into Courtenay Stream along the south boundary of the property.

- 30 The drain is around 270 metres long, straight, moderately deep and steep, and is fenced on both sides. Shallow water was present along most of its length, above a thick, fine mud base. There was no flow or aquatic plants present. Despite the long grass on the banks, the drain would receive little shade.
- 31 At the end of the 270-metre section, the drain enters a culvert, turns a 90 degree angle and travels underground along a fence line. The water exits a pipe at the end of the paddock into a wide ~40 metre channel and discharges into the Courtnay Stream.
- 32 The risers on the Waghorn Builders side stands about 20 centimetres proud of the base of the wide drain, so the drain would need to fill with quite a large volume of water before it spilled over the riser, through the culvert under the road and into the drain on 168 Main North Road. Mud in the base of this drain was cracked, indicating it has previously been deep mud but not held water for a long time.
- 33 The lack of flow in the drain and reduced opportunity for stormwater flows from upstream to reach the drain suggest that the waterway has ephemeral flow (i.e. it only flows for a short time after rainfall). Note that ephemeral or intermittent flow cannot be conclusively determined from a single visit, especially in summer. Also, it is only water flow that affects the designation of 'ephemeral' for streams, the persistence of non-flowing water is irrelevant.
- 34 The persistence of stagnant water in the drain despite the lack of flow or shade is probably due a high water table. If the water table was lower or the drain shallower, then the drain would completely dry out.
- 35 The water looked unlikely to support fish life, or invertebrates other than species highly tolerant of poor water quality and conditions. The only aquatic invertebrate observed were clumps of small, red Oligochaete worms. These have a Macroinvertebrate Index (MCI) tolerance value of 3.8 in soft bottomed streams, indicating that they are very tolerant of highly impacted (unhealthy) conditions.
- 36 The Courtenay Stream, which receives water from the stormwater drain, is a small, slow-flowing river. This runs along the southern boundary of the property. The substrate is primarily soft sediment, with large areas of introduced aquatic vegetation. The water is generally shallow, although the

mud appears deep, with visibly deeper areas in the middle. The banks on the side of the property form a low shelf, and are generally soft, damp and shaded.

- 37 The north boundary of the property runs along the Kaikainui Stream. This is much narrower than the Kaikainui, and is in a moderately incised channel. Flow was very slow and water depth was hidden by thick aquatic plant growth and murky water. The opposite bank has indigenous plantings along the edge, including trees providing shade and sedges providing immediate overhead cover and invertebrate habitat for emerging adults of aquatic larvae, terrestrial predators preying on the aquatic adults, and terrestrial invertebrates falling in to become food for aquatic fauna.

FLORA

- 38 Twelve indigenous and seventy-three exotic vascular plant species were recorded during the site visit (Appendix 2), however, the majority of the indigenous species were planted.
- 39 Three of the exotic species are listed as organisms of interest by Environment Canterbury (CPRS) and a further two are considered ecological weeds (Table 1).

Table 1: Ecological weeds and pest plants present at the South Kaiapoi site.

Species	Common Name	Status
<i>Betula species</i>	Birch	Organism of Interest
<i>Lupinus arboreus</i>	Tree lupin	Organism of interest
<i>Rubus fruticosus</i>	Blackberry	Organism of interest
<i>Salix fragilis</i>	Crack willow	Ecological weed
<i>Sambucus nigra</i>	Elder	Ecological weed

- 40 No threatened or At Risk vascular plants occur naturally on the site. Wind grass (*Anemanthele lessoniana*) At Risk – Relict (de Lang *et al* 2018) is present in the amenity area. Wind grass is widely planted in gardens and plantings across New Zealand. In this context it has been planted in the garden, therefore is not a naturally occurring At Risk plant.

FAUNA

Freshwater Fish and Invertebrates

- 41 There are three fish surveys recorded in the New Zealand Freshwater Fish Database in the Courtenay Stream, downstream of the property. Two records

are either side of a large flap gate downstream, dated 2021 and were conducted using fyke nets. The other is from 2003, used several net types and was not as far downstream. Nine fish and one large invertebrate species were found (Table 2). All but the brown trout are indigenous species. The most common species numerically were common bully (*Gobiomorphus cotidianus*), shortfin and longfin eels (*Anguilla australis* and *A. dieffenbachii*), and common smelt (*Retropinna retropinna*). There are no other recorded surveys in the Courtenay catchment, including the Kaikainui Stream.

- 42 All of the indigenous species recorded have a migratory lifecycle, requiring movements to and from the sea at set points in their lifecycle, except for the yellow eyed mullet (*Aldrichetta forsteri*), which is a marine species that can spend up to a tide cycle feeding in fresh water. These indigenous, migratory species are expected to be present further up the Courtenay and Kaikainui Streams but not in the drains present within the site.

Table 2: Fish observed in the four fish surveys in the Courtenay catchment recorded in the New Zealand Freshwater Fish Database.

Common Name	Species Name	Threat Status	Records
Black flounder	<i>Rhombosolea retiaria</i>	Not Threatened	1
Brown trout	<i>Salmo trutta</i>	Introduced	1
Common bully	<i>Gobiomorphus cotidianus</i>	Not Threatened	2
Common smelt	<i>Retropinna retropinna</i>	Not Threatened	2
Freshwater shrimp	<i>Paratya curvirostris</i>	Not Threatened	2
Giant bully	<i>Gobiomorphus gobioides</i>	At Risk – Naturally Uncommon	2
Inanga	<i>Galaxias maculatus</i>	At Risk - Declining	2
Longfin eel	<i>Anguilla dieffenbachii</i>	At Risk - Declining	2
Shortfin eel	<i>Anguilla australis</i>	Not Threatened	2
Yelloweyed mullet	<i>Aldrichetta forsteri</i>	Not Threatened	2

Avifauna

- 43 Five indigenous and two exotic birds were detected during the site visit. Of these, tarāpunga/red-billed gull (*Chroicocephalus novaehollandiae scopulinus*) is listed as At Risk – Declining (Robertson *et al.* 2021) (Appendix 5).
- 44 The eBird desktop database search identified 16 indigenous and 14 exotic bird species. Of these, three were classified as At Risk – Declining (pihoihoi/New

Zealand pipit, *Anthus novaeseelandiae novaeseelandiae*, tarāpuka/black-billed gull, *Chroicocephalus bulleri*; tōrea/South Island pied oystercatcher, *Haematopus finschi*). All other observed bird species were either Not Threatened or Introduced and Naturalised (threat classification as per Robertson *et al.* 2021; Appendix 5)

Lizards

- 45 There are relatively few records of lizards within the Waimakariri District, which reflects the highly modified low plains area, and a lack of formal surveys. Species known from within 20 kilometres of the site include Canterbury grass skink (*Oligosoma* aff. *polychroma* Clade 4; At Risk – Declining), southern grass skink (*Oligosoma* aff. *polychroma* Clade 5; At Risk – Declining), McCann’s skink (*Oligosoma maccanni*; Not Threatened) Waitaha gecko (*Woodworthia* cf. *brunnea*; At Risk – Declining), and jewelled gecko (*Naultinus gemmeus*; At Risk – Declining) (Table 3).
- 46 Although no records of Canterbury spotted skink (*Oligosoma lineocellatum*, Threatened – Nationally Vulnerable) were detected within a 20-kilometre radius of the South Kaiapoi rezoning area, their known distribution covers this area, and therefore were included.

Table 3: Results of the Department of Conservation Bioweb Herpetofauna database search within a 20 kilometre radius of Kaiapoi rezoning area and an assessment of the likelihood of the presence of these species within that area. Conservation status as per Hitchmough *et al.* 2021. The likelihood of occurrence at the site for each species is given based on their known habitat preferences and distribution in the area and surrounds.

Species	Common Name	Conservation Status	Nearest Record (km)	Year of Record	Preferred Habitats	Likelihood
<i>Oligosoma</i> aff. <i>polychroma</i> Clade 4	Canterbury grass skink	At Risk – Declining	10.4	2022	Lowland/montane shrublands grasslands, screes, talus slopes and rocky or boulder areas.	Highly likely
<i>Oligosoma maccanni</i>	McCann’s skink	Not Threatened	16.4	2006	Open habitats including dry rocky environments such as rock outcrops and montane grassland.	Possible
<i>Woodworthia</i> cf. <i>brunnea</i>	Waitaha gecko	At Risk – Declining	2.9	2021	Loose rocks, rock tors, and outcrops, and occasionally forest from mid Canterbury to southern Marlborough.	Unlikely
<i>Oligosoma</i> aff. <i>polychroma</i> Clade 5	Southern grass skink	At Risk - Declining	5.1	2020	Damp or well vegetated habitats such as rank grasslands, wetlands, stream/river edges and gullies	Highly unlikely
<i>Naultinus gemmeus</i>	Jewelled gecko	At Risk – Declining	12.2	Pre-1970	Scrub, regenerating forest, shrubland	Highly unlikely
<i>Oligosoma lineoocellatum</i>	Canterbury spotted skink	Threatened – Nationally Vulnerable	*	*	Wide range of habitats including grasslands, scrubland, forest edged, and rocky habitats	Highly unlikely

*No records within 20 kilometre search radius, but included as the site is within known range.

- 47 Canterbury grass skink is the most likely species to be present within the site, given the habitat quality and extent. This species is most likely to inhabit modified environments, including agricultural areas, where there is a complex of rank grass, fence lines, unmanaged hedgerows and woody or anthropogenic debris. Such lizard habitat can be found in the following vegetation types within the Kaiapoi rezoning site: Exotic hedgerows, Amenity planting, Rank grass grassland, and Mixed exotic grassland (including wood piles). Due to the abundance of appropriate habitat on site, it is highly likely that Canterbury grass skink will be present. However, due to the majority of this habitat being limited to edges and small areas, they will only be present in low density fragmented populations across the site.
- 48 McCann's skink may possibly be present within the rezoning area. McCann's skink also commonly inhabit highly modified areas and are common throughout the Canterbury region but, they are less commonly found on the lower plains. They are usually found in drier, and often rockier habitats than those present within the site.
- 49 Waitaha gecko are unlikely to be present given the habitat available and the extent of the land use modification. It may be possible that a remnant population is present around/in the existing dwellings, but this species would likely be undetectable at low densities.
- 50 Canterbury spotted skink, jewelled gecko, and southern grass skink are highly unlikely to be present. No Canterbury spotted skink records were detected within a 20 kilometre radius of the Kaiapoi rezoning site. Jewelled gecko occupy indigenous scrub and shrubland, which is not present within the site. Additionally, southern grass skink is also highly unlikely to be present, given its range does not extend north of the Waimakariri River on the low plains.

SUMMARY OF ECOLOGICAL VALUES

- 51 Vegetation within the site is highly modified and mainly comprises exotic species and therefore is of low ecological value. The tall fescue-rautahi wetland located in the southern part of the site contains naturally occurring indigenous species, with the indigenous sedge rautahi a key component of the vegetation. The wetland appears to have retained hydrological function

and therefore is one of the more natural and ecologically valuable parts of the site.

- 52 It is possible that tōrea/South Island pied oystercatcher (At Risk – Declining) and pihoihoi/New Zealand pipit (At Risk – Declining) may utilise the grassland habitats present within the site as for foraging and breeding.
- 53 The small amount of rank grassland surrounding the site may provide a small amount of potential habitat for the Canterbury grass skink (At Risk). Even smaller fragments of habitat including exotic hedgerows and amenity plantings and the wood pile within the exotic grassland also have the potential to provide habitat for the Canterbury grass skink.
- 54 The drain present on the site is probably ephemeral and holds little ecological value. It may be used as a source of water for some birds and invertebrates, and it may be a habitat for highly tolerant midge larvae which in turn provide food for birds and invertebrates, but this would be trivial compared to the neighbouring Courtenay and Kakainui Streams.

ECOLOGICAL SIGNIFICANCE ASSESSMENT

- 55 The site was evaluated for ecological significance against the Canterbury Regional Policy Statement (CRPS Appendix 3)¹¹ and the proposed Waimakariri District Plan (pWDP,ECO-APP1) , which both use the same criteria (Appendix 6). A second evaluation was undertaken using the Appendix 1 Criteria , from the National Policy Statement for Indigenous Biodiversity (NPS-IB, Appendix 7). A site only needs to meet one criterion to count as ecologically significant.
- 56 The vegetation present on the site alone does not meet any of the ecological significance criteria, but the desktop assessments have indicated a number of vegetation habitat types may meet the criteria if specific Threatened or At Risk species are present
- 57 Exotic grassland and cropland vegetation types (ripgut brome grassland, ryegrass grassland and mixed exotic grassland) may provide habitat for tōrea/South Island pied oystercatcher and pihoihoi/New Zealand pipit which

¹¹ CRPS; APPENDIX 6 - Criteria for determining significant indigenous vegetation and significant habitat of indigenous biodiversity.

are listed as At Risk. If tōrea/South Island are determined to be present onsite, then the criteria for rarity under the CPRS would be met. However, tōrea/South Island pied oystercatcher and pihoihoi/New Zealand pipit are present in three or more regions and, therefore, do not meet the criteria for rarity under the NPS IB¹², unless both species were found to be present. However, they are also considered highly mobile fauna in Appendix 2 and Section 3.2 of the NPS IB, so, if these species are present, a further assessment could consider whether the site falls within a larger highly mobile fauna area in the region that falls outside of SNAs.

- 58 Exotic hedgerows, garden (amenity planting and lawns), exotic grassland and rank grassland could potentially meet the ecological significance criteria for Rarity/Distinctiveness in the CRPS and pWDP, and the NPS-IB and CPRS if they are providing habitat for the Canterbury grass skink, because Canterbury grass skink has a threat status of At Risk – Declining and are found in less than three regions (Canterbury and West Coast). However, it should be noted that potential habitat is restricted to highly modified non-indigenous habitats: a wood pile within the mixed exotic grassland (in the exotic grassland and cropland vegetation types), amenity plantings within the garden and areas of longer grass beneath exotic hedgerows. Although somewhat fragmented and small, rank grassland represents the largest and most continuous habitat for Canterbury grass skink.
- 59 A full assessment of each habitat against both criteria is provided in Appendix 6 and 7.

THE PROPOSAL

- 60 The Outline Development Plan (ODP; Mike Greer Homes 2024; Appendix 1) includes a residential zone of medium density lots, a stormwater management area along the western boundary and esplanade reserves (20 meters wide) in the north and south along stream boundaries. A recreational reserve is located in the south west corner with an optional reserve in the north east corner. A small area has been specifically earmarked for ecological enhancement within the stormwater management area and the esplanade reserves will include indigenous riparian plantings.

¹² <https://environment.govt.nz/assets/publications/biodiversity/National-Policy-Statement-for-Indigenous-Biodiversity.pdf>

- 61 The stormwater management area is widest in the southern part of the site and extends north along the railway boundary. It includes the entirety of the tall fescue-rautahi wetland in the south of the site as well as some of the ripgut brome grassland and ryegrass grassland. The inclusion of the wetland habitat within the reserve means that the wetland can be protected from development and vegetation clearance. The current ODP does not include the entire wetland within the ecological enhancement area. There is potential to enhance the ecological value of the wetland through planting of ecologically appropriate species both within the area marked for ecological enhancement and the wider storm water management area. The wetland would also benefit through the planting of ecologically appropriate species around the perimeter to act as a buffer.
- 62 If indigenous plantings are undertaken within the esplanade reserves along boundaries of Kaikainui Stream and Courtenay Stream these will have a positive ecological impact. The planting of ecologically appropriate species will increase the extent of indigenous species on the site. This will provide ecological value in a number of ways. Riparian plantings will provide a buffer to the Kaikainui Stream and Courtenay Stream, potentially filtering unwanted runoff and contaminants and helping to shade these streams. Once mature, the plantings will provide of habitat and cover for indigenous avifauna. Mature trees and shrubs will provide a source for seed to be dispersed into the surrounding area and potentially increase indigenous vegetation in surrounding areas.
- 63 A number of areas within the ODP have been identified as potential lizard habitat. However, there is no reason why this should impede rezoning provided more detailed lizard surveys are undertaken prior to any development, and if present managed to avoid, or mitigate impacts in accordance with Wildlife Act (1953 -refer section below).
- 64 An area in the south east of the site has been identified as a potential location for habitat creation for Canterbury mudfish (*Neochanna burrowsius*, Threatened - Nationally Critical). The Canterbury mudfish has the highest threat status out of the five species found in New Zealand and is particularly vulnerable to climate change. There are several otherwise-isolated mudfish populations to the east of Kaiapoi, in wetlands between the Waimakariri River

and Waikuku Beach. Unfortunately, these wetlands are very low-lying and are threatened by sea-level rise, with one population already affected by salt-water inundation. Translocating fish from the coastal wetlands to created wetlands further inland is the only way to preserve the future of coastal populations in the district long term. Mudfish can breed fast if suitable habitat is found and their threat classification is due to extensive loss of wetlands. Once successfully established they do not require intensive management. Exploration of potential translocation of mudfish into constructed wetlands onsite is recommended as it could benefit the species through providing more secure habitat long-term and public awareness of the species, and would be a biodiversity gain. However, this would require detailed input from freshwater ecologists and the Department of Conservation, and translocation permits.

RELEVANT PLANNING PROVISIONS

National Environmental Standards for Freshwater

- 65 The National Environmental Standards for Freshwater (NES-F) has a number of provisions to protect urban and rural streams as well as wetlands. Earthworks, vegetation clearance, or disturbance of natural wetlands, or within a 10 metre setback from an inland natural wetland, is heavily restricted and in most cases a Non-complying activity (Regulation 53, 54 NES-F 2020). Earthworks, vegetation clearance, water discharge or diversion within 100 meters of an inland natural wetland is often a restricted discretionary activity or discretionary activity depending on the impact to the hydrology of the wetland and the purpose of the activity (Regulation 45C NES-F 2020).
- 66 Both the tall fescue-rautahi wetland located within the storm water reserve and crack willow tree land (wetland) are considered natural inland wetlands and therefore some of the regulations set out in the NES-F apply. The crack willow tree land (wetland) is located on the banks of the Courtenay Stream and is outside of proposed development area.
- 67 The regulations constraining activities within 10m and 100m of the wetland warrant further investigation to determine if the proposed works are likely to be considered permitted or discretionary activities under the National Environmental Standards for Freshwater.

- 68 The stormwater drain does not fall under the definition of a 'river' under the RMA or the NPS-FM, nor is it a modified natural waterway. It does not have a natural source, the area was not historically a wetland, and it is entirely artificial (constructed for the purpose of draining stormwater). Therefore, piping and infilling it would not be a loss of river extent under the NPS-FM.

National Policy Statement for Indigenous Biodiversity

- 69 The objective of the NPS-IB is to maintain terrestrial indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss in indigenous biodiversity. For subdivisions or developments outside of a Significant Natural Area (SNA), any significant adverse effects on indigenous biodiversity must be managed by applying the effects management hierarchy (Clause 3.16(1)).
- 70 A full Assessment of Ecological Effects (AEE) for the proposed rezoning has not been undertaken. Based on the current ODP (2024), the proposed rezoning would not result in any significant adverse effects or loss of indigenous biodiversity, and any lesser effects could be managed on a case by case basis for various proposed developments.
- 71 Specified highly mobile fauna. Potential habitat is present on the site for tōrea/South Island pied oystercatcher and pihoihoi/New Zealand pipit, which are listed as specified highly mobile fauna within Appendix 2 of the NPS-IB. However, the areas identified as potential habitats are variations of exotic grassland/ and pasture which is widespread in the area, therefore development is unlikely to have impact these species because they have alternative habitats. However, developments would need to avoid these species if they were breeding on site, until such time as breeding had been completed.

Wildlife Act

- 72 Most indigenous vertebrate animal and some invertebrate species are protected under the Wildlife Act (1953, s63 (1) (c)). In cases where proposed activities affect indigenous fauna, a Wildlife Act Authority (WAA) must be applied for and approved by the Department of Conservation (DOC). A permit under the Wildlife Act must also be obtained from DOC before any indigenous fauna can be disturbed, handled, translocated or killed. This

includes clearance of exotic vegetation that is occupied by indigenous fauna. A Lizard Management Plan and Wildlife Act Authority may be required if indigenous lizards are found within vegetation on the site that was proposed for clearance, and there is no suitable way of avoiding this.

Proposed Waimakariri District Plan

- 73 Courtenay Stream is a Schedule 2 waterway (NATC-SCHED2) in the pWDP. Schedule 2 waterways require a minimum of a 10 meter riparian setback from development in residential zones¹³.
- 74 Kaikainui Stream is not currently named in the in the proposed Waimakariri District Plan (pWDP), Natural Character schedule (NATC-SCHED) of freshwater bodies. Unscheduled streams require a minimum five metre riparian setback from any development. However, not all freshwater bodies have been investigated, and with further investigation the schedule status of this stream could change.

MATTERS RAISED BY SUBMITTERS

- 75 There are no matters raised by submitters that are relevant to my evidence.

CONCLUSION

- 76 The site primarily comprises exotic pastoral farmland with few examples of indigenous vegetation. Two natural inland wetland areas were identified during the site visit, one of which is located within the Stormwater Management Area and the other within the Esplanade Reserve.
- 77 The drain present on the site is not considered to be a modified natural waterway or 'river' under the RMA and has low ecological value.
- 78 Desktop fauna assessments have indicated that At Risk avifauna and lizards could potentially utilize some habitats present on the site, which means that despite the low value of vegetation, some habitats may meet ecological significance criteria if these species are determined to be present.
- 79 However, further surveys would be required to determine if At Risk fauna are present. In general, the habitat values identified appear to have low ecological value due to the highly modified nature of the site.

¹³ <https://waimakariri.isoplan.co.nz/draft/rules/0/228/0/0/0/226>

80 The potential presence of At-Risk species is unlikely to constrain development. In particular, avifauna are unlikely to be negatively impacted by the proposal.

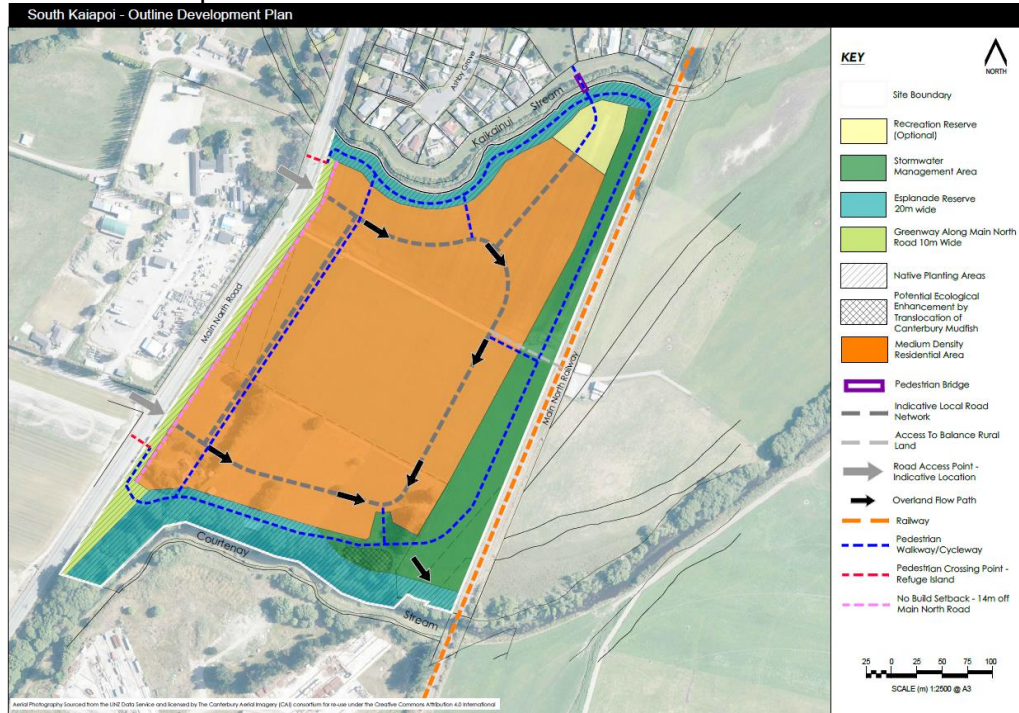
81 However, a lizard habitat assessment should be undertaken by a qualified expert to determine the presence of lizards on the site. If detected, a Wildlife Act Authority and Lizard Management Plan may be required.

Lydia Metcalfe
28 February 2024

Appendix 1

Outline Development Plan

South Kaiapoi - Outline Development Plan



Appendix 2

Vascular plant species list

*Indicates exotic species

Species	Common Name	Plant Type	Comment
<i>Achillea millefolium</i> *	Yarrow	Forb	
<i>Agapanthus praecox</i> *	Agapanthus	Graminoid	Planted
<i>Agrostis capillaris</i> *	Browntop	Graminoid	
<i>Agrostis stolonifera</i> *	Creeping bent	Graminoid	
<i>Alopecurus geniculatus</i> *	Kneed foxtail	Graminoid	
<i>Anemanthele lessoniana</i>	Wind grass	Graminoid	Planted
<i>Anthoxanthum odoratum</i> *	Sweet vernal	Graminoid	
<i>Arenaria serpyllifolia</i> *	Sandwort	Forb	
<i>Atriplex patula</i> *		Forb	
<i>Azolla rubra</i>		Fern	
<i>Bellis perennis</i> *	Lawn daisy	Forb	
<i>Betula species</i> *		Tree	
<i>Bromus catharticus</i> *	Prairie grass	Graminoid	
<i>Bromus diandrus</i> *	Ripgut brome	Graminoid	
<i>Callitriche stagnalis</i> *	Starwort	Forb	
<i>Calystegia sylvatica</i> *	Great bindweed	Vine	
<i>Camellia japonica</i> *	Camellia	Tree	Planted
<i>Carduus nutans</i> *	Nodding thistle	Forb	
<i>Carex geminata</i>	Rautahi	Graminoid	
<i>Carex secta</i>	Pūkio	Graminoid	
<i>Cerastium fontanum</i> *	Mouse-ear chickweed	Forb	
<i>Cupressus macrocarpa</i> *	Macrocarpa	Tree	Planted
<i>Cynosurus cristatus</i> *		Graminoid	
<i>Dactylis glomerata</i> *	Cocksfoot	Graminoid	
<i>Dryopteris filix-mas</i> *	Male fern	Fern	
<i>Eleocharis acuta</i>	Spike sedge	Graminoid	
<i>Erythranthe guttata</i> *	Monkey musk	Forb	
<i>Eucalyptus species</i> *	Eucalyptus	Tree	Planted
<i>Fumaria muralis</i> *	Scrambling fumitory	Forb	
<i>Holcus lanatus</i> *	Yorkshire fog	Graminoid	
<i>Hordeum species</i> *		Graminoid	Planted
<i>Hydrangea macrophylla</i>	Hydrangea	Shrub	
<i>Hydrocotyle novae-zeelandiae</i>		Forb	
<i>Hypochaeris radicata</i> *	Catsear	Forb	
<i>Iris species</i> *	Iris	Graminoid	Planted
<i>Isolepis species</i>		Graminoid	
<i>Juglans species</i> *		Tree	
<i>Juncus articulatus</i> *	Jointed rush	Graminoid	
<i>Juncus bulbosus</i> *	Bulbous rush	Graminoid	
<i>Juncus edgariae</i>	Wi, wīwī	Graminoid	
<i>Juncus effusus</i> *	Soft rush	Graminoid	
<i>Kunzea robusta</i>	Kānuka	Tree	Planted
<i>Lamium purpureum</i>	Red dead nettle;	Forb	
<i>Lavandula Species</i> *	Lavender	Shrub	Planted
<i>Lolium arundinaceum</i> *	Tall fescue;	Graminoid	
<i>Lolium perenne</i> *	Ryegrass	Graminoid	
<i>Lonicera japonica</i> *	Japanese honeysuckle	Vine	
<i>Lupinus arboreus</i> *	Tree lupin	Shrub	

Species	Common Name	Plant Type	Comment
<i>Lysimachia arvensis</i> subsp. <i>arvensis</i> var. <i>arvensis</i> *	Pimpernel	Forb	
<i>Myosotis laxa</i> *	Water forget-me-not	Forb	
<i>Myriophyllum propinquum</i>	Common water milfoil	SubShrub	
<i>Nasturtium officinale</i> *	Watercress	Forb	
<i>Persicaria hydropiper</i> *		Forb	
<i>Persicaria punctata</i> *	American willow weed	Forb	
<i>Phleum pratense</i> *	Timothy	Graminoid	
<i>Phormium tenax</i>	Harakeke	Graminoid	
<i>Plantago lanceolata</i> *	Narrow-leaved plantain	Forb	
<i>Plantago major</i> *	Broad-leaved plantain	Forb	
<i>Poa annua</i> *	Annual poa	Graminoid	
<i>Poa pratensis</i> *	Kentucky blue grass	Graminoid	
<i>Polycarpon tetraphyllum</i> *	Allseed	Forb	
<i>Prunella vulgaris</i> *	Selfheal	Forb	
<i>Prunus species</i> *	Ornamental cherry	WoodyMixed	Planted
<i>Pseudognaphalium luteoalbum</i>	Pukatea, jersey cudweed	Forb	
<i>Quercus species</i>	Oak	Tree	Planted
<i>Ranunculus flammula</i> *	Spearwort	Forb	
<i>Ranunculus repens</i> *	Creeping buttercup	Forb	
<i>Ranunculus sceleratus</i> *	Celery-leaved buttercup	Forb	
<i>Rosa species</i> *	Climbing rose	Shrub	Planted
<i>Rubus fruticosus</i> *	Blackberry	SubShrub	
<i>Rumex obtusifolius</i> *	Broad-leaved dock	Forb	
<i>Salix fragilis</i> *	Crack willow	Tree	
<i>Sambucus nigra</i> *		Shrub	
<i>Sisymbrium officinale</i> *	Wild mustard, hedge mustard	Forb	
<i>Solanum dulcamara</i> *	Bittersweet	SubShrub	
<i>Sophora tetraptera</i>	Kōwhai, North Island kōwhai	Tree	Planted
<i>Stellaria alsine</i> *	Bog stitchwort	Forb	
<i>Taraxacum officinale</i> *	Dandelion	Forb	
<i>Trifolium pratense</i> *	Red clover	Forb	
<i>Trifolium repens</i> *	White clover	Forb	
<i>Verbascum thapsus</i>	Woolly mullein	Forb	
<i>Veronica arvensis</i> *	Field speedwell	Forb	
<i>Vicia sativa</i> *	Vetch	Forb	
<i>Vinca major</i> *	Periwinkle	Forb	
<i>Viola species</i> *		Forb	

Appendix 3



Appendix 4

Wetland identification and delineation methodology

The vegetation and habitats on the site were evaluated for wetland status according to the Resource Management Act (RMA; 1991), which defines wetlands as “permanently or intermittently wet areas, shallow water, and land/water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions”, and the National Policy Statement for Freshwater Management (NPS-FM; 2020). A natural inland wetland is defined in the operative NPS-FM as a wetland (as defined in the RMA) that is not:

- 1) In the coastal marine area; or
- 2) A deliberately constructed wetland, other than a wetland constructed to offset impacts on, or to restore, an existing or former natural inland wetland; or
- 3) A wetland that has developed in or around a deliberately constructed water body, since the construction of the water body; or
- 4) A geothermal wetland; or
- 5) A wetland that:
 - I. Is within an area of pasture used for grazing; and
 - II. Has vegetation cover comprising more than 50% exotic pasture species (as identified in the National List of Exotic Pasture Species using the Pasture Exclusion Assessment Methodology); unless
 - III. The wetland is a location of a habitat of a threatened species identified under clause 3.8 of the NPS-FM, in which case the exclusion in 9e) does not apply.

The NPS-FM refers to the Ministry for the Environment (MfE) wetland delineation protocols (December 2022) in order to determine the status of wetlands. The hydrophytic vegetation test relies on the presence of hydrophytes. Hydrophytes are plant species capable of growing in soils that are often or constantly saturated with water during the growing season. The hydrophyte categories (wetland indicator status ratings: Clarkson 2013 and subsequent updates) are:

- Obligate (OBL): occurs almost always in wetlands (estimated probability >99% in wetlands).
- Facultative Wetland (FACW): occurs usually in wetlands (67–99%).
- Facultative (FAC): equally likely to occur in wetlands or non-wetlands (34–66%).
- Facultative Upland (FACU): occurs occasionally in wetlands (1–33%).
- Upland (UPL): rarely occurs in wetlands (<1%), almost always in ‘uplands’ (non-wetlands).

In accordance with the methods described in MfE (2022), in areas of potential wetland we applied the following methods:

- Firstly, the Rapid wetland test was completed. For this test to confirm the area as a wetland, all dominant species must be either OBL or FACW species. If the Rapid Wetland test fails (or is uncertain), additional hydrophytic vegetation tests are required.
- Two tests are required for the hydrophytic vegetation determination (Dominance test and Prevalence index). Representative plots (2 metre · 2 metre for herb

strata) were established in different vegetation types and geomorphic positions in a potential wetland on the site. In each plot, the species in each stratum (i.e. tree, sapling/shrub, herb) were identified and percent cover estimated. Species hydrophytic categories were taken from Manaaki Whenua (2021) and the dominant species were noted.

- For the Dominance test to confirm the area as a wetland, >50% of the dominant species must be OBL, FACW or FAC and all/most dominant species must not be FAC.
- For the Prevalence Index (PI) test, a plot-based algorithm derived from the unique combination of OBL–UPL plants and their cover is calculated. The vegetation is hydrophytic (wetland) if $PI \leq 3.0$, but values around 3.0 can also be considered wetlands when other wetland indicators are present.
- If the Rapid, Dominance, and Prevalence tests are inconclusive, then indicators of wetland hydrology were used to determine if there was wetland hydrology and/or hydric soils present.
- If the hydrology and soil indicate the presence of wetland conditions, and no exclusions applied (i.e. pasture exclusion test) then the definition of a wetland was met for the site under the RMA and NPS-FM.
- For more detailed methodology refer to MFE (2022; 2021) and/or Clarkson (2013).

Wetland delineation results

Plot 1 Vegetation Plot Data						
Stratum	Species Name	Common Name	% Cover	Dominant?	Indicator Status	Pasture Species?
Herb 2 x 2 m	<i>Lolium arundinaceum</i>	Tall fescue	35	YES	FAC	Y
	<i>Carex geminata</i>	Cutty grass, Rautahi	35	YES	FACW	N
	<i>Ranunculus repens</i>	Creeping buttercup	5	NO	FAC	N
	<i>Juncus bulbosus</i>	Bulbous rush	1	NO	OBL	N
	<i>Holcus lanatus</i>	Yorkshire fog	5	NO	FAC	Y
	<i>Rumex obtusifolius</i>	Broad-leaved dock	3	NO	FAC	N
	<i>Juncus articulatus</i>	Jointed rush	1	NO	FACW	N
	<i>Agrostis stolonifera</i>	Creeping bent	7	NO	FACW	N
	<i>Trifolium repens</i>	White clover	5	NO	FACU	Y
	Total Cover:			97		
20% Cover:			19			
50% Cover:			49			

Plot 1

Pasture Exclusion Test

Pasture Species Cover =	45
Total Vegetation Cover =	97
% Cover of Pasture Species =	46%
Pasture determination =	NOT PASTURE

Dominance Test

Number of dominant species OBL, FACW, or FAC (A) =	2
Total number of dominant species across all strata (B) =	2
Percent of dominant species that are OBL, FACW, or FAC (A/B) =	100%
Wetland vegetation determination =	WETLAND

Prevalence Index			
Indicator Status	Total % Cover	Multiplication Factor	Multiplied % Cover
OBL	1	x 1 =	1
FACW	43	x 2 =	86
FAC	48	x 3 =	144
FACU	5	x 4 =	20
UPL	0	x 5 =	0
Total (A)	97	Total (B)	251
Prevalence Index (B/A) =			2.59
Wetland vegetation determination =			WETLAND

Plot 2 Vegetation Plot Data							
Stratum	Species Name	Common Name	% Cover	Dominant?	Indicator Status	Pasture Species?	
Herb 2 x 2 m	<i>Lolium arundinaceum</i>	Tall fescue	35	YES	FAC	Y	
	<i>Carex geminata</i>	Cutty grass, Rautahi	20	YES	FACW	N	
	<i>Juncus bulbosus</i>	Bulbous rush	5	NO	OBL	N	
	<i>Holcus lanatus</i>	Yorkshire fog	10	NO	FAC	Y	
	<i>Juncus articulatus</i>	Jointed rush	1	NO	FACW	N	
	<i>Agrostis stolonifera</i>	Creeping bent	10	NO	FACW	N	
	<i>Trifolium repens</i>	White clover	5	NO	FACU	Y	
	<i>Juncus effusus</i>	Soft rush	20	YES	FACW	N	
	<i>Lolium perenne</i>	Perennial ryegrass	1	NO	FACU	Y	
	<i>Trifolium pratense</i>	Red clover	1	NO	FACU	Y	
	<i>Alopecurus geniculatus</i>	Kneed foxtail, Marsh foxtail	1	YES	FACW	N	
	Total Cover:			109			
	20% Cover:			22			
50% Cover:			55				

Plot 2		Plot 2 Pasture Exclusion Test	
		Pasture Species Cover =	52
		Total Vegetation Cover =	109
		% Cover of Pasture Species =	48%
		Pasture determination =	NOT PASTURE
Dominance Test			
		Number of dominant species OBL, FACW, or FAC (A) =	4
		Total number of dominant species across all strata (B) =	4
		Percent of dominant species that are OBL, FACW, or FAC (A/B) =	100%
		Wetland vegetation determination =	WETLAND
Prevalence Index			
Indicator Status	Total % Cover	Multiplication Factor	Multiplied % Cover
OBL	5	x 1 =	5
FACW	52	x 2 =	104
FAC	45	x 3 =	135
FACU	7	x 4 =	28
UPL	0	x 5 =	0
Total (A)	109	Total (B)	272
		Prevalence Index (B/A) =	2.50
		Wetland vegetation determination =	WETLAND

Plot 3 Vegetation Plot Data							
Stratum	Species Name	Common Name	% Cover	Dominant?	Indicator Status	Pasture Species?	
Herb 2 x 2 m	<i>Lolium arundinaceum</i>	Tall fescue	8	NO	FAC	Y	
	<i>Carex geminata</i>	Cutty grass, Rautahi	5	NO	FACW	N	
	<i>Juncus bulbosus</i>	Bulbous rush	3	NO	OBL	N	
	<i>Holcus lanatus</i>	Yorkshire fog	15	YES	FAC	Y	
	<i>Juncus articulatus</i>	Jointed rush	20	YES	FACW	N	
	<i>Agrostis stolonifera</i>	Creeping bent	15	YES	FACW	N	
	<i>Trifolium repens</i>	White clover	10	NO	FACU	Y	
	<i>Trifolium pratense</i>	Red clover	2	NO	FACU	Y	
	<i>Erythranthe guttata</i>	Monkey musk	2	NO	OBL	N	
	<i>Ranunculus repens</i>	Creeping buttercup	8	NO	FAC	N	
		Total Cover:	88				
		20% Cover:	18				
		50% Cover:	44				

Plot 3

Plot 3 Pasture Exclusion Test

Pasture Species Cover =	35
Total Vegetation Cover =	88
% Cover of Pasture Species =	40%
Pasture determination =	NOT PASTURE

Dominance Test

Number of dominant species OBL, FACW, or FAC (A) =	3
Total number of dominant species across all strata (B) =	3
Percent of dominant species that are OBL, FACW, or FAC (A/B) =	100%
Wetland vegetation determination =	WETLAND

Prevalence Index

Indicator Status	Total % Cover	Multiplication Factor	Multiplied % Cover
OBL	5	x 1 =	5
FACW	40	x 2 =	80
FAC	31	x 3 =	93
FACU	12	x 4 =	48
UPL	0	x 5 =	0
Total (A)	88	Total (B)	226
Prevalence Index (B/A) =			2.57
Wetland vegetation determination =			WETLAND

Plot 4 Vegetation Plot Data							
Stratum	Species Name	Common Name	% Cover	Dominant?	Indicator Status	Pasture Species?	
Herb	<i>Lolium arundinaceum</i>	Tall fescue	40	YES	FAC	Y	
	<i>Carex geminata</i>	Cutty grass, Rautahi	0	NO	FACW	N	
2 x 2 m	<i>Agrostis stolonifera</i>	Creeping bent	50	YES	FACW	N	
	<i>Trifolium repens</i>	White clover	5	NO	FACU	Y	
	<i>Ranunculus repens</i>	Creeping buttercup	15	NO	FAC	N	
	<i>Rumex obtusifolius</i>	Broad-leaved dock	5	NO	FAC	N	
	Total Cover:		115				
	20% Cover:		23				
	50% Cover:		58				

Plot 4		Pasture Exclusion Test	
		Pasture Species Cover =	45
		Total Vegetation Cover =	115
		% Cover of Pasture Species =	39%
		Pasture determination =	NOT PASTURE
Dominance Test			
		Number of dominant species OBL, FACW, or FAC (A) =	2
		Total number of dominant species across all strata (B) =	2
		Percent of dominant species that are OBL, FACW, or FAC (A/B) =	100%
		Wetland vegetation determination =	WETLAND
Prevalence Index			
Indicator Status	Total % Cover	Multiplication Factor	Multiplied % Cover
OBL	0	x 1 =	0
FACW	50	x 2 =	100
FAC	60	x 3 =	180
FACU	5	x 4 =	20
UPL	0	x 5 =	0
Total (A)	115	Total (B)	300
		Prevalence Index (B/A) =	2.61
		Wetland vegetation determination =	WETLAND

Appendix 5

Results from the eBird desktop database search. *Denotes birds also observed during the site visit.

Common Name(s)	Scientific name	Threat Classification	Likelihood	Preferred Habitats
Indigenous				
New Zealand pipit/ pīhoihoi	<i>Anthus novaeseelandiae novaeseelandiae</i>	At Risk-Declining	Possible	Beaches, riverbeds, high-country river flats, gravel roads and verges, rough pasture, tussockland, cleared areas of exotic forests.
Black-billed gull/ tarāpuka	<i>Chroicocephalus novaehollandiae bulleri</i>	At Risk-Declining	Possible	Breed on braided riverbeds and inland lakes. Arable farmland. During winter, coastal estuaries, harbours, open coastlines and urban centres.
South Island pied oystercatcher/tōrea	<i>Haematopus finschi</i>	At Risk-Declining	Likely	Breed on braided riverbeds, farmland, fringes of lakes, subalpine bogs. Estuaries and sandy beaches outside of breeding.
Bellbird/korimako	<i>Anthornis melanura melanura</i>	Not Threatened	Possible	Native forest and scrubland, exotic plantations, river margins and urban environments with native bush (e.g., parks).
Grey duck – mallard hybrid	<i>Anas superciliosa × platyrhynchos</i>	Not Threatened	Likely	Wetlands, lakes, slow flowing rivers, calm tidal waters.
Grey warbler/riroriro	<i>Gerygone igata</i>	Not Threatened	Possible	Temperate forest, scrubland, pasture, and urban environments. From sea level to subalpine zone.
Paradise shelduck/ pūtangitangi	<i>Tadorna variegata</i>	Not Threatened	Likely	Grassland, pond, tussockland, farmland, lakes, riverbeds.
Pied stilt/poaka	<i>Himantopus himantopus leucocephalus</i>	Not Threatened	Not likely	Riverbeds, estuaries, wetlands, paddocks, lake margins, inland lakes, coastal lagoons.
Pūkeko*	<i>Porphyrio melanotus melanotus</i>	Not Threatened	Possible	Waterways, grassland, wetland, grassland rough damp pasture.
Silvereye/tauhou	<i>Zosterops lateralis lateralis</i>	Not Threatened	Possible	Native forest, scrubland, exotic plantations, suburban gardens.
South Island fantail/pīwakawaka	<i>Rhipidura fuliginosa fuliginosa</i>	Not Threatened	Possible	Forest, scrubland (second growth), farmland with scattered trees, suburban environments.
Southern black-backed gull/karoro*	<i>Larus dominicanus dominicanus</i>	Not Threatened	Possible	Estuaries, harbours, open coastlines, rivers, lakes, wet pasture, lambing paddocks, farmland, rubbish tips and urban environments.
Spur-winged plover*	<i>Vanellus miles novaehollandiae</i>	Not Threatened	Likely	Arable land and pasture, riverbeds, coastal and lake shores, urban parks.

Common Name(s)	Scientific name	Threat Classification	Likelihood	Preferred Habitats
Swamp harrier/kāhu	<i>Circus approximans</i>	Not Threatened	Possible	Open country, wetlands, farmlands, grasslands, high-country tussockland, forest margins, riverbeds.
Welcome swallow/ warou	<i>Hirundo neoxena neoxena</i>	Not Threatened	Likely	Lowland open country, less common in open high country.
White-faced heron/ matuku moana	<i>Egretta novaehollandiae</i>	Not Threatened	Unlikely	Open country, swampland, lake shores, estuaries, farm dams and creeks, wetlands, riverbeds, mudflats, harbours, rocky shores and sandy beaches.
Exotic				
Australian magpie	<i>Gymnorhina tibicen</i>	Introduced and Naturalised	Likely	Hedgerows, grassland, open pasture, forest patches, suburban environments.
California quail	<i>Callipepla californica</i>	Introduced and Naturalised	Possible	Open country, low scrub, tussockland, rough pasture, especially manuka scrub, wild Irishman, gorse, bracken, broom and briar. Riverbeds with lupin.
Chaffinch	<i>Fringilla coelebs</i>	Introduced and Naturalised	Likely	Hedgerows, grassland, native and exotic forests, farmland. Sea level to alpine scrub.
Common redpoll	<i>Acanthis flammea</i>	Introduced and Naturalised	Likely	Farmland, tussockland, coastal dunes, forest and scrub margins, subalpine scrub.
Eurasian blackbird	<i>Turdus merula</i>	Introduced and Naturalised	Likely	Suburban environments, paddocks, hedgerows, grassland, scrub and native forests.
Goldfinch	<i>Carduelis carduelis</i>	Introduced and Naturalised	Likely	Low altitudes. Farmlands and suburban environments.
Greenfinch	<i>Chloris chloris</i>	Introduced and Naturalised	Likely	Farmlands, pine plantations, hedgerows grasslands and suburban environments.
House sparrow*	<i>Passer domesticus</i>	Introduced and Naturalised	Likely	Arable farmland, rural and urban environments.
Little owl	<i>Athene noctua</i>	Introduced and Naturalised	Possible	Hedgerows, rural and semi-rural buildings, farmland, drier coastal areas, stands of native and exotic trees.
Mallard	<i>Anas platyrhynchos</i>	Introduced and Naturalised	Likely	Wetlands, ponds, rivers and estuaries in both rural and urban environments.
Rock pigeon	<i>Columba livia</i>	Introduced and Naturalised	Possible	Arable farmland, rural and urban environments.
Skylark*	<i>Alauda arvensis</i>	Introduced and Naturalised	Likely	Open country, grassland, dunes, farmland, tussockland. Sea level to subalpine herbfields.
Song thrush	<i>Turdus philomelos</i>	Introduced and Naturalised	Likely	Hedgerows, farmland, hedgerows, orchards and suburban environments.
Starling	<i>Sturnus vulgaris</i>	Introduced and Naturalised	Likely	Hedgerows, grassland, farmland, rural and suburban environments, forest edges.

Appendix 6

Evaluation of the South Kaiapoi site using the ecological significance criteria in the Canterbury Regional Policy Statement

Ecological Significance Criteria	Crack willow tree land	Exotic hedgerows	Exotic grassland / cropland ¹⁴	Garden (lawn and amenity planting)	Rank grass grassland	Wetland (Crack willow treeland (wetland) and Tall fescue-rautahi wetland)	Drains
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.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
2. Indigenous vegetation or habitat of indigenous fauna that is a relatively large example of its type within the relevant ecological district.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
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.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
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.	Does not meet threshold	May meet threshold. Potential habitat for At Risk indigenous lizard (Canterbury grass skink) identified.	May meet threshold. May provide habitat to tōrea/South Island pied oystercatcher (At Risk) and pihoihoi/New Zealand pipit (At Risk). Canterbury grass skink (At Risk) may be present within the wood plie located in the exotic grassland.	Threshold may be met. Canterbury grass skink (At Risk) may be present within amenity planting areas.	Threshold may be met. Canterbury grass skink (At Risk) may be present within rank grassland areas.	Does not meet threshold	Does not meet threshold
5. The site contains indigenous vegetation or an indigenous species at its distribution limit within Canterbury Region or nationally.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
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 combination of factors.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
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.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
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.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
9. A wetland which plays an important hydrological, biological or ecological role in the natural functioning of a river or coastal system.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
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.	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold

¹⁴ Exotic grassland and cropland habitats (Ripgut brome grassland, Ryegrass grassland and mixed exotic grassland) have been assessed together, as due to the rotational grazing / cropping land use pattern, these habitats overlap.

Appendix 7

Evaluation of the South Kaiapoi site using the ecological significance criteria in the National Policy Statement on indigenous biodiversity

1 What qualifies as an SNA

- (1) An area qualifies as an SNA if it meets any one of the attributes of the following four criteria:
- representativeness;
 - diversity and pattern;
 - rarity and distinctiveness;
 - ecological context.
- (2) If an area would qualify as an SNA solely on the grounds that it provides habitat for a single indigenous fauna species that is At Risk (declining), and that species is widespread in at least three other regions, the area does not qualify as an SNA unless:
- the species is rare within the region or ecological district where the area is located; or
 - the protection of the species at that location is important for the persistence of the species as a whole.
- (3) If an area would qualify as an SNA solely on the grounds that it contains one or more indigenous flora species that are Threatened or At Risk (declining), and those species are widespread in at least three other regions, the area does not qualify as an SNA unless:
- the species is rare within the region or ecological district where the area is located; or
 - the protection of the species at that location is important for the persistence of the species as a whole.

2 Context for assessment

- (1) The context for an assessment of an area is:
- its ecological district; and
 - for the rarity assessment only, its ecological district, its region and the national context.

3 Manner and form of assessment

- (1) Every assessment must include at least:
- a map of the area; and
 - a general description of its significant attributes, with reference to relevant criteria (as specified below); and
 - a general description of the indigenous vegetation, indigenous fauna, habitat, and ecosystems present; and
 - additional information, such as the key threats, pressures, and management requirements; and
 - for SNAs in areas of Crown-owned land referred to in clause 3.8(8), the conservation management strategy or plan or national park management plan that applies to the area.
- (2) An assessment under this appendix must be conducted by a suitably qualified ecologist (which, in the case of an assessment of a geothermal ecosystem, requires an ecologist with geothermal expertise).

Ecological Significance Criteria	Crack willow tree land	Exotic hedgerows	Exotic grassland/ cropland ¹⁵	Garden ¹⁶	Rank grass grassland	Wetland	Drains
A. Representativeness criterion							
<p>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.</p> <p><i>Key assessment principles</i></p> <p>2. Significant indigenous vegetation has ecological integrity typical of the indigenous vegetation of the ecological district in the present-day environment. It includes seral (regenerating) indigenous vegetation that is recovering following natural or induced disturbance, provided species composition is typical of that type of indigenous vegetation.</p> <p>3. Significant indigenous fauna habitat is that which supports the typical suite of indigenous animals that would occur in the present-day environment. Habitat of indigenous fauna may be indigenous or exotic.</p> <p>4. Representativeness may include commonplace indigenous vegetation and the habitats of indigenous fauna, which is where most indigenous biodiversity is present. It may also include degraded indigenous vegetation, ecosystems and habitats that are typical of what remains in depleted ecological districts. It is not restricted to the best or most representative examples, and it is not a measure of how well that indigenous vegetation or habitat is protected elsewhere in the ecological district.</p> <p>5. When considering the typical character of an ecological district, any highly developed land or built-up areas should be excluded.</p> <p>6. The application of this criterion should result in identification of indigenous vegetation and habitats that are representative of the full range and extent of ecological diversity across all environmental gradients in an ecological district, such as climate, altitude, landform, and soil sequences. The ecological character and pattern of the indigenous vegetation in the ecological district should be described by reference to the types of indigenous vegetation and the landforms on which it occurs.</p> <p><i>Attributes of representativeness</i></p> <p>7. An area that qualifies as an SNA under this criterion has at least one of the following attributes:</p> <ol style="list-style-type: none"> indigenous vegetation that has ecological integrity that is typical of the character of the ecological district; habitat that supports a typical suite of indigenous fauna that is characteristic of the habitat type in the ecological district and retains at least a moderate range of species expected for that habitat type in the ecological district. 	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	

¹⁵ Exotic grassland and cropland habitats (Ripgut brome grassland, Ryegrass grassland and mixed exotic grassland) have been assessed together, as due to the rotational grazing / cropping land use pattern, these habitats overlap.

¹⁶ Garden habitats (lawn and amenity planting) combined for assessment

Ecological Significance Criteria	Crack willow tree land	Exotic hedgerows	Exotic grassland/ cropland ¹⁵	Garden ¹⁶	Rank grass grassland	Wetland	Drains
B Diversity and pattern criterion							
<p>1. Diversity and pattern is the extent to which the expected range of diversity and pattern of biological and physical components within the relevant ecological district is present in an area..</p> <p><i>Key assessment principles</i></p> <p>2. Diversity of biological components is expressed in the variation of species, communities, and ecosystems. Biological diversity is associated with variation in physical components, such as geology, soils/substrate, aspect/exposure, altitude/depth, temperature, and salinity.</p> <p>3. Pattern includes changes along environmental and landform gradients, such as ecotones and sequences.</p> <p>4. Natural areas that have a wider range of species, habitats or communities or wider environmental variation due to ecotones, gradients, and sequences in the context of the ecological district, rate more highly under this criterion.</p> <p><i>Attributes of diversity and pattern.</i></p> <p>5. An area that qualifies as a significant natural area under this criterion has at least one of the following attributes:</p> <p>a) at least a moderate diversity of indigenous species, vegetation, habitats of indigenous fauna or communities in the context of the ecological district:</p> <p>b) presence of indigenous ecotones, complete or partial gradients or sequences.</p>	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold
C Rarity and distinctiveness criterion							
<p>1. Rarity and distinctiveness is the presence of rare or distinctive indigenous taxa, habitats of indigenous fauna, indigenous vegetation or ecosystems.</p> <p><i>Key assessment principles.</i></p> <p>2. Rarity is the scarcity (natural or induced) of indigenous elements: species, habitats, vegetation, or ecosystems. Rarity includes elements that are uncommon or threatened.</p> <p>3. The list of Threatened and At Risk species is regularly updated by the Department of Conservation. Rarity at a regional or ecological district scale is defined by regional or district lists or determined by expert ecological advice. The significance of nationally listed Threatened and At Risk species should not be downgraded just because they are common within a region or ecological district.</p> <p>4. Depletion of indigenous vegetation or ecosystems is assessed using ecological districts and land environments.</p> <p>5. Distinctiveness includes distribution limits, type localities, local endemism, relict distributions, and special ecological or scientific features.</p> <p><i>Attributes of rarity and distinctiveness</i></p> <p>6. An area that qualifies as an SNA under this criterion has at least one of the following attributes:</p> <p>a. provides habitat for an indigenous species that is listed as Threatened or At Risk (declining) in the New Zealand Threat Classification System lists:</p> <p>b. an indigenous vegetation type or an indigenous species that is uncommon within the region or ecological district:</p> <p>c. an indigenous species or plant community at or near its natural distributional limit:</p> <p>d. indigenous vegetation that has been reduced to less than 20 per cent of its prehuman extent in the ecological district, region, or land environment:</p> <p>e. indigenous vegetation or habitat of indigenous fauna occurring on naturally uncommon ecosystems:</p> <p>f. the type locality of an indigenous species:</p> <p>g. the presence of a distinctive assemblage or community of indigenous species:</p> <p>h. the presence of a special ecological or scientific feature.</p>	Does not meet threshold	May meet threshold. Potential habitat for At Risk indigenous lizard (Canterbury grass skink) identified.	May meet threshold. May provide habitat to tōrea/South Island pied oystercatcher (At Risk) and pihoihoi/New Zealand pipit (At Risk) .Canterbury grass skink (At Risk) may be present within the wood plie located in the exotic grassland.	Threshold may be met. Canterbury grass skink (At Risk) may be present within amenity planting areas.	Threshold may be met. Canterbury grass skink (At Risk) may be present within rank grassland areas.	Does not meet threshold	Does not meet threshold
D Ecological context criterion							
<p>1. Ecological context is the extent to which the size, shape, and configuration of an area within the wider surrounding landscape contributes to its ability to maintain indigenous biodiversity or affects the ability of the surrounding landscape to maintain its indigenous biodiversity.</p> <p><i>Key assessment principles</i></p> <p>2. Ecological context has two main assessment principles:</p> <p>a) the characteristics that help maintain indigenous biodiversity (such as size, shape, and configuration) in the area; and</p> <p>b) the contribution the area makes to protecting indigenous biodiversity in the wider landscape (such as by linking, connecting to or buffering other natural areas, providing 'stepping stones' of habitat or maintaining ecological integrity).</p> <p><i>Attributes of ecological context</i></p> <p>3. An area that qualifies as an SNA under this criterion has at least one of the following attributes:</p> <p>a) at least moderate size and a compact shape, in the context of the relevant ecological district:</p> <p>b) well-buffered relative to remaining habitats in the relevant ecological district:</p>	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold

Ecological Significance Criteria	Crack willow tree land	Exotic hedgerows	Exotic grassland/cropland ¹⁵	Garden ¹⁶	Rank grass grassland	Wetland	Drains
c) provides an important full or partial buffer to, or link between, one or more important habitats of indigenous fauna or significant natural areas: d) important for the natural functioning of an ecosystem relative to remaining habitats in the ecological district.							

