

**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 **Mark
and Melissa Prosser**

**EVIDENCE OF ROLAND PAYNE
ON BEHALF OF MARK AND MELISSA PROSSER**

DATED: 5 March 2024

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INTRODUCTION

- 1 My name is Roland Kahurangi Payne.
- 2 I hold the position of Senior Ecologist at Wildland Consultants Ltd (Wildlands), based in Christchurch.
- 3 I hold the degrees of Bachelor of Science from the University of Canterbury and a Masters in Science Communication with distinction from the University of Otago.
- 4 I have worked as both a field botanist and team leader undertaking the measurement of more than two hundred individual 20 m × 20 m vegetation monitoring plots throughout New Zealand, including on the Chatham Islands. This included the measurement of plots for the Land Use and Carbon Analysis System (LUCAS). The vegetation measured in these plots covered nearly every land environment in New Zealand from coastal bluffs and wetlands to sub-alpine tussock and shrub-land communities.
- 5 My work as an ecological consultant has included ecological investigations of areas of vegetation throughout New Zealand, including sites in Canterbury, Otago, Westland, Tasman, Marlborough, Auckland, Northland, Bay of Plenty, Horowhenua, Wellington, Whanganui and the Manawatū. I have provided assessments of ecological effects for numerous developments in natural areas and have previously provided expert evidence in respect of those assessments in council hearings. I have also undertaken numerous ecological significance assessments for landholders and councils and I am an author of over 60 contract reports.
- 6 I have frequently provided technical advice to clients in relation to vegetation clearance and development plans, including providing solutions for achieving no net loss of biodiversity and/or net gains.
- 7 While this is not an Environment Court proceeding, I confirm that 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

- 8 In my evidence I address the following issues:
1. The existing vegetation and habitats, including waterways and potential wetlands.
 2. Indigenous biodiversity.
 3. Ecological values and ecological significance.
 4. Ecological assessment of Outline Development Plan (ODP).

CONTEXT

Purpose and scope of evidence

- 9 Mark and Melissa Prosser of Ohoka Farm Holdings (**OFHL**) Limited, are seeking the rezoning of a property from 'rural lifestyle' to 'large lot residential', at 2 Ashworths Road, Mandeville, Canterbury. The site is in the Waimakariri District and covers approximately 73 hectares of pastoral farmland, with boundaries on Ashworths Road to the north and Dawsons Road to the west. An Outline Development Plan (ODP, Aurecon 2023)¹, has been developed for the site, which includes an adjoining 1.5 hectare lot to the east that would be used for stormwater management. .
- 10 OFHL engaged Wildland Consultants Ltd (Wildlands) to undertake an assessment of ecological values and wetland habitats on the site. An additional desktop assessment was also undertaken to evaluate the ecological significance and fauna values of the site and inform an assessment against relevant policies and Appendix 1 criteria in the National Policy Statement for Indigenous Biodiversity (NPS-IB). High level analysis of the potential impacts are also included, as well as recommendations for biodiversity gains.

SUMMARY OF EVIDENCE

- 11 The proposed rezoning site is actively grazed and cultivated farmland. There is historical evidence of wetlands in the east and north of the site and several

¹ Aurecon 2023: Mandeville North-East Development Area Outline Development Plan, 524072-W00001-DRG-US-0002 (2023-11-28). Drawn by: R Dawson. Designed by J Trist.

old river channels and shallow depressions are present in this area. During the site survey, boggy areas were also observed around some gates and cattle troughs. Investigations found that these depressions and boggy areas were not natural inland wetlands under the National Policy Statement for Freshwater Management (2020) definition.

- 12 A desktop assessment of indigenous fauna and habitat values found that the habitats on the site were all highly modified and degraded, but still provide potential habitat for at least three At Risk indigenous bird species and one At Risk indigenous lizard species. Additionally, the streams on and around the site provide potential habitat for at least one At Risk freshwater fish species.
- 13 If At Risk indigenous fauna are found to be present, habitats on the site could be considered ecologically significant under the criteria of both the Canterbury Regional Policy Statement and the National Policy Statement for Indigenous Biodiversity. However, further surveys would be required to determine the presence of any At Risk fauna found in the desktop survey, and even if found, the habitat values remain low due to the highly modified nature of the site.
- 14 It is recommended that if rezoning occurs the waterways and springs on the site are protected and enhanced with appropriate indigenous riparian planting. Further gains could be made through indigenous planting in the proposed stormwater management reserves.
- 15 Prior to any subdivision consent and development works, additional surveys are recommended for indigenous lizards, nesting birds, and freshwater fauna.

METHODOLOGY

- 16 In preparing this evidence I used the following methods:
1. Desktop survey. 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 maps) and reviewing database records. Online databases (iNaturalist, eBird, DOC Bioweb) were searched for information on invertebrate, lizard, bird, and vegetation values within and around the site. Lizard records were searched within a 10-kilometre radius, while eBird records were restricted to five kilometres between 1 January 2017 and 30 April 2023.

2. Site survey. The site was surveyed for terrestrial vegetation and wetlands on 31 May 2023. All vegetation and associated habitat types were mapped and described broadly following the structural classes in Atkinson (1985)². Potential natural inland wetland areas were assessed and delineated where present, using methods described in Section 2.3 below. Field mapping was digitised onto aerial imagery using ArcGIS. All vascular plant species observed are listed in **Appendix 1**.
3. Natural wetlands assessment. A walkover of the entire site was undertaken to identify and (if necessary) delineate any natural inland wetlands. The vegetation and habitats on the site were evaluated for wetland status according to the Resource Management Act (RMA; 1991)³, 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)⁴. A natural inland wetland is defined in the operative NPS-FM as a wetland (as defined in the RMA) that is not:
 - a) In the coastal marine area; or
 - b) A deliberately constructed wetland, other than a wetland constructed to offset impacts on, or to restore, an existing or former natural inland wetland; or
 - c) A wetland that has developed in or around a deliberately constructed water body, since the construction of the water body; or
 - d) A geothermal wetland; or
 - e) A wetland that:
 - i. Is within an area of pasture used for grazing; and
 - ii. Has vegetation cover comprising more than 50% exotic pasture species (as identified in the National List of Exotic

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 New Zealand Government 1991: Resource Management Act. Wellington

⁴ Ministry for the Environment 2020: National Policy Statement for Freshwater Management 2020. Wellington: Ministry for the Environment. 70 pp

Pasture Species using the Pasture Exclusion Assessment Methodology)⁵; 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 (e) does not apply.
4. The NPS-FM refers to the Ministry for the Environment (MfE) wetland delineation protocols (December 2022)⁶ 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 2013⁷ and subsequent updates)⁸ 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).

5. For the purpose of this assessment and in accordance with the methods described in MFE (2022), areas of potential wetland were assessed using the 'Rapid Test' defined as follows:

Rapid Test: All dominant species across all strata are rated OBL and/or FACW.

⁵ Ministry for the Environment 2022: Pasture exclusion assessment methodology. Wellington: Ministry for the Environment. 51 pp.

⁶ Ministry for the Environment 2022: Wetland delineation protocols. Wellington: Ministry for the Environment. 14 pp

⁷ Clarkson B. 2013: A vegetation tool for wetland delineation in New Zealand. Manaaki Whenua Landcare Research Contract Report LC1793

⁸ Manaaki Whenua 2021: New Zealand Wetland Plant List 2021. This report was prepared by Manaaki Whenua – Landcare Research for Hawke's Bay Regional Council. 66 pp.

6. In areas where the vegetation was sparse, indicators of wetland hydrology and hydric soil were used to determine presence of wetland conditions. If wetland hydrology, and hydric soil indicators were present and no exclusions applied (i.e. pasture exclusion test) then the definition of a wetland would be met under the RMA and NPS-FM. For more detailed methodology refer to MFE (2022; 2021)⁹ and/or Clarkson (2013).

THE RECEIVING ENVIRONMENT

ECOLOGICAL CONTEXT

- 17 The property is located within the Low Plains Ecological District (ED), that covers the eastern part of the Canterbury Plains. It stretches from Waipara in the north to Timaru in the south. The following description is adapted from Harding (2019)¹⁰.
- 18 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; younger surfaces comprise recent river gravel. The long coastline of the district comprises sand and sand/gravel beaches with low dunes, dune lakes, and lagoons north of Banks Peninsula.
- 19 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.
- 20 It is likely that the severity of the climate on the open plains, including the desiccating effect of frequent strong northwest winds and relatively low rainfall (<800mm per annum), and the frequency of natural fires, prevented the perpetuation of extensive forests. More extensive areas of podocarp forest and wetland would have been present at well-watered sites nearer the coast,

⁹ Ministry for the Environment 2021: Wetland delineation hydrology tool for Aotearoa New Zealand. Wellington: Ministry for the Environment. 83 pp

¹⁰ Harding M.A. 2009: Canterbury Land Protection Strategy. Published by the Nature Heritage Fund, Wellington

such as north of Christchurch. Freshwater wetlands were relatively extensive on eastern parts of the plains, and saline wetlands present along the coast.

- 21 The original vegetation of Low Plains ED has been substantially depleted 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.
- 22 Based on the Black Maps, historical survey maps which recorded vegetation zones in the period 1848-1870, the north east corner of the site was covered in a raupō (*Typha orientalis*) and flax (*Phormium tenax*) wetland swamp. The middle of the property (presumably the swamp margins) was recorded as flax, grass, tūpāki/tutu (*Coriaria species*), while the western half of the property was mapped as downs, presumably referring to grass or tussockland.

VEGETATION AND HABITATS

- 23 At the time of this survey the entire site (with the exception of tracks and hedge rows) was covered with improved pasture and cropland (Figure 1, **Appendix 2**). In total five vegetation types (four terrestrial and one wetland) and two aquatic habitats were identified

Terrestrial Vegetation

1. Exotic hedgerows
2. Indigenous shrubland plantings
3. Perennial ryegrass (cocksfoot) grassland
4. Beet cropland

Aquatic

5. Waterways (streams and ditches)
6. Pond

Terrestrial habitats

- 24 1. Exotic hedgerows are present around parts of the site boundary and some paddock margins. These hedgerows are mostly formed by a row of one tree species, including radiata pine (*Pinus radiata*), macrocarpa (*Cupressus*

macrocarpa), gum tree (*Eucalyptus* species) and poplar (*Populus nigra*) (Plate 1). Occasional other trees present include willow (*Salix* species), blackwood (*Acacia melanoxylon*) and tree lucerne (*Chamaecytisus palmensis*). The ground cover beneath these trees is dominated by exotic grasses and pasture weeds including prairie grass (*Bromus catharticus*), cocksfoot (*Dactylis glomerata*), stinging nettle (*Urtica urens*), mallow (*Malva* species) and nightshades (*Solanum chenopodioides*, *S. nigrum*).

- 25 2. Indigenous shrubland plantings. A narrow (three metre) strip along the northern Ashworths Road boundary has recently been planted in a variety of indigenous trees and shrubs. Species observed in the area include toetoe (*Austroderia richardii*), mikimiki (*Coprosma propinqua*), karamū (*Coprosma robusta*), mānatu (ribbonwood; *Plagianthus regius*), kōwhai (*Sophora microphylla*), kāpuka (*Griselinia littoralis*), akeake (*Olearia avicenniifolia*), and kōhūhū (*Pittosporum tenuifolium*). Plant height varies between 0.5 to 1.5 metres and the ground in-between plants is bare (Plate 1).
- 26 3. Perennial ryegrass (cocksfoot) grassland. Pasture grassland covers most of the site, with perennial rye grass (*Lolium perenne*) the most common species in the (pivot) irrigated paddocks. Cocksfoot is locally abundant in other paddocks and herbs, including clovers (mostly *Trifolium repens* and *T. pratense*), narrow-leaved plantain (*Plantago lanceolata*), and broad-leaved dock (*Rumex obtusifolius*) are common throughout (Plate 2). Vegetation cover varied depending on how recently the grazed the area was.
- 27 4. Beet cropland. At the time of the survey, beet (*Beta vulgaris*) cropland covered most of the north west paddocks on the site. Interspersed with the beet is abundant hedge mustard (*Sisymbrium officinale*), shepherds purse (*Capsella bursa-pastoris*), scrambling speedwell (*Veronica persica*), narrow-leaved plantain, and docks (*Rumex* spp.) (Plate 2).



Plate 1: Exotic eucalyptus hedgerow (left) and Indigenous shrubland plantings (right).



Plate 2: Perennial ryegrass (cocksfoot) grassland (left), and beet cropland (right).

Potential wetlands

- 28 A number of boggy areas were observed in parts of the property, that largest of which was around a gate in the east of the site that connected the main site to the adjoining lot proposed for stormwater management. Here, frequent tractor movements had churned up the soft ground, with no vegetation present (Plate 3). A review of historical aerial imagery (going back to the 1940s) showed no indication of surface inundation and natural wetland hydrology at this location and it is not considered to be a natural inland wetland.
- 29 Other areas of the site where surface water pooling (or evidence of) was observed included paddock gates and around water troughs (Plate 3). These depressions were likely caused by cattle movement and compaction and were

within areas of grazed pasture with no hydrophytic vegetation. As such, they are excluded from the NPS-FM definition of natural inland wetland.

- 30 Other potential wetlands were also investigated in the east of the site. The Canterbury black maps show a large raupō swamp in this area and extending east along the waterways (off the site). There were also several areas in the east where surface water inundation was visible on current and historic aerial imagery, which seemed to be associated with old stream channels in this area. On the ground, the old stream channels were hard to detect, but there were some slight undulations and several depressions that were more obvious. A few smaller depressions had surface water present, while the rest were dry. Investigations of these depressions found pasture grasses growing in the shallow pans with no other hydrophytic vegetation present (Plate 4). Wetland hydrology indicators including, sparsely vegetated concave surface, inundation on aerial imagery and geomorphic position¹¹ were all present indicating wetland hydrology. However, as the site is grazed and the vegetation is dominated by species listed in the National List of Exotic Pasture Species, these areas are excluded from the definition of natural inland wetland.



Plate 3: Boggy areas, close to paddock gate (not a wetland; left), and surrounding a cattle trough (not a wetland; right).

¹¹ Refer: New Zealand Wetland Data Form – Section C Soil and hydrology. Primary indicators: sparsely vegetated concave surface (2H), inundation on aerial imagery (2G); secondary indicators, geomorphic position (4B).



Plate 4: Depression with surface water (left), and dry depression with regenerating pasture grass (right).

Aquatic habitats

- 31 Waterways. There are two permanent streams associated with the site and several ditches or farm drains with intermittent flow. The main streams are the south branch of the Ohoka Stream, which flows parallel to the northeast site boundary (along Ashworths Road), and a spring fed stream that flows south along the eastern boundary into the pond (Plate 5). This spring fed waterway, flows out of the pond and joins a water race (with intermittent flow) that extends through the centre of the site, before flowing eastwards into the south branch of the Ohoka Stream (Figure 1; Appendix 2). The east flowing part of this waterway forms the northern boundary of the proposed stormwater retention reserve.
- 32 Pond. An artificially constructed pond is present near the eastern boundary. Rank grass including cocksfoot and prairie grass are growing on the margins along with occasional woody weeds including gorse (*Ulex europaeus*), and elderberry (*Sambucus nigra*), (Plate 5). The pond is fed by the waterway on the eastern boundary and is used for duck shooting , as well as, water storage. No hydrophytic wetland vegetation was observed around the margins of this pond and the steeply banked sides would generally inhibit any from establishing. As a deliberately constructed water body, any wetland habitat that did develop around this pond would not meet the definition of a natural inland wetland provided in the NPS-FM.



Plate 3: Farm pond with decoy ducks floating in water (left), and spring feed waterway with flowing water on the eastern boundary (right).

FLORA

Overview.

33 Sixteen indigenous and 57 exotic vascular plants species were recorded during the survey (Appendix 1). However, only three of the 16 indigenous species were naturally occurring, the rest were found within the indigenous planting strip along the Ashworths Road boundary. The three naturally occurring indigenous species are common duckweed (*Lemna minor*), found growing in standing or slow-moving water and two pennywort species (*Hydrocotyle moschata*, *H. novae-zeelandiae*), that were growing in damp grass.

Threatened or At-Risk species

34 Kānuka (*Kunzea robusta*, Threatened – Nationally Vulnerable) (de Lange *et al* 2018)¹², was observed growing in the roadside indigenous plantings. However, as this was planted it is not considered Threatened in the context of this site. No other threatened or at-risk indigenous plant species were recorded on the site.

Taonga plants

35 Indigenous shrubland plantings on the property contain a number of species listed as taonga species in Schedule 97 of the Ngāi Tahu Claims Settlement Act 1998, including karamū, kōwhai, kāpuka, and kānuka. However, no naturally occurring listed taonga plant species are present.

¹² de Lange P.J., Rolfe J.R., Barkla J.W., Courtney S.P., Champion P.D., Perrie L.R., Beadel S.M., Ford K.A., Breitwieser I., Schonberger I., Hindmarsh-Walls R., Heenan P.B., and Ladley K. 2018: Conservation status of New Zealand indigenous vascular plants, 2017. New Zealand Threat Classification Series 22. Department of Conservation, Wellington. 82 pp.

Pest plants

36 Gorse is the only pest plant recorded that is identified under the Environment Canterbury Regional Pest Management Plan (RPMP) (2018-2038)¹³. This was in very low abundance with a few individual plants scattered along fence lines and boundaries, many of which appeared to be dead (likely controlled with herbicide). Two other species found on the site are listed as 'Organisms of Interest' within the Environment Canterbury RPMP (Table 1). Pines and conifers recorded on the site had all been planted. These are not wilding conifers and are therefore not considered pest plants under the RPMP.

Table 1: Environment Canterbury RPMP (Pest) and Organisms of Interest (OoI) found on the site.

Species	Common Name	Pest Classification
<i>Chamaecytisus palmensis</i>	tree lucerne	RPMP-OoI
<i>Conium maculatum</i>	Hemlock	RPMP-OoI
<i>Ulex europaeus</i>	Gorse	RPMP-Pest

LIZARDS

37 The Waimakariri District is not well surveyed for lizards, and the low plains represent a highly modified environment, which is not of particularly high value for indigenous lizards. Species known from near the site include Canterbury grass skink (*Oligosoma* aff. *polychroma* "Clade 4"; At Risk-Declining), Waitaha gecko (*Woodworthia* cf. *brunnea*; At Risk-Declining), and jewelled gecko (*Naultinus gemmeus*; At Risk – Declining) (Table 2).

¹³ Environment Canterbury 2013: Canterbury Regional Policy Statement 2013. Environment Canterbury

Table 2: Results of the Department of Conservation Bioweb Herpetofauna database search within a 10 kilometre radius of Ohoka Farm and an assessment of the likelihood of the presence of these species at Ohoka Farm. Conservation status as per Hitchmough *et al.* 2021¹⁴. The likelihood of occurrence 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	Preferred Habitats	Likelihood
<i>Naultinus gemmeus</i>	Jewelled gecko	At Risk – Declining	Rangiora (pre-1970)	Scrub, regenerating forest, shrubland	Highly unlikely
<i>Woodworthia cf. brunnea</i>	Waitaha gecko	At Risk – Declining	Kaiapoi (2013)	Loose rocks, rock tors, and outcrops, and occasionally forest from mid Canterbury to southern Marlborough.	Unlikely
<i>Oligosoma aff. polychroma</i> Clade 4	Canterbury grass skink	At Risk – Declining	Rangiora (2022); Waimakariri River (2018)	Lowland/montane shrublands grasslands, screes, talus slopes and rocky or boulder areas	Possible

- 38 Of the lizard species listed in Table 2, it is highly unlikely that jewelled gecko are still persisting within such a highly modified environment, and are therefore not considered further.
- 39 Waitaha gecko is also unlikely to be present given the habitat available and the extent of land use modification. It may be possible that a remnant population is present around any woodsheds or old building debris, but this species would likely be undetectable at low densities.
- 40 Canterbury grass skink is the most likely species to be present given the habitat quality and extent within the site. This species is most likely to inhabit modified environments where there is a complex of rank grass, fence lines, hedgerows (if left unmanaged) and woody debris. Although few records of Canterbury grass skink were found within the search radius, this species is commonly found within the Canterbury region and is likely under reported, therefore it is possible they are present in low numbers on the site. However, it is not considered likely that rezoning would result in significant adverse effects on lizards, provided more detailed lizard surveys are undertaken prior

¹⁴ Hitchmough R.A., Barr B., Knox C., Lettink M., Monks J.M., Patterson G.B., Reardon J.T., van Winkel D., Rolfe J., and Michel P. 2021: Conservation status of New Zealand reptiles, 2021. New Zealand Threat Classification Series 35. Department of Conservation, Wellington. 15 pp

to any subdivision development, and if present, they are managed to avoid, or mitigate adverse effects in accordance with the Wildlife Act (refer section 10.3 below).

BIRDS

- 41 The eBird desktop database search identified 24 indigenous and 19 exotic species (**Appendix 3**, Table A3-1). Of these, one Threatened – Nationally Endangered, two At Risk – Declining, one At Risk – Naturally Uncommon and one At Risk – Relict species were recorded (threat status as per Robertson et al. 2021)¹⁵.
- 42 Eight bird species identified in the desktop survey are listed as taonga species in Schedule 97 of the Ngāi Tahu Claims Settlement Act 1998 (Appendix 3, Table A3-1).
- 43 Of the indigenous birds listed in Appendix 3 Table A3-1, two At Risk species, South Island pied oystercatcher/tōrea (*Haematopus finschi*) and little shag/kawaupaka (*Microcarbo melanoleucos brevirostris*) are both considered likely to utilise habitats on the site. A number of other Not Threatened species are also likely to be present including pūkeko (*Porphyrio melanotus*), and paradise shelduck/pūtangitangi (*Tadorna variegata*), which were both seen on the site. However, it is not considered likely that rezoning would result in significant adverse effects on indigenous birds, provided more detailed avifauna surveys are undertaken prior to any subdivision development, and if present managed to avoid, or mitigate impacts in accordance with the Wildlife Act (refer section 10.3 below).

FISH

- 44 The waterways within the property are a part of the Ohoka Stream sub-catchment, which is part of the Waimakariri River catchment. There are 13 survey records in the New Zealand Freshwater Fish Database from the Ohoka Stream catchment, all downstream of the property. These records are dated 2001 to 2011, and the surveys were conducted using set nets or electrofishing methods.

¹⁵ Robertson H.A., Baird K.A., Elliott G.P., Hitchmough R.A., McArthur N.J., Makan T.D., Miskelly C.M., O'Donnell C.F.J., Sagar P.M., Scofield R.P., Graeme Taylor G.A. and Michel P. 2021: Conservation status of birds in Aotearoa New Zealand, 2021. New Zealand Threat Classification Series 36. Department of Conservation, Wellington, New Zealand.

- 45 The fish species recorded during these surveys are listed in Table 3. Threat classifications for fish and invertebrates are taken from Dunn et al. (2018). The 'likelihood' column is the estimated likelihood of each species being detected within the property, based on how frequently they are recorded in the local and wider area, number of individuals found in each survey, and the altitude and distance inland of the site.
- 46 Table 3: Freshwater fish species recorded in the 13 surveys downstream of the property in the Ohoka Stream sub-catchment. Also, the estimated likelihood of each species being present in the property, assuming there are not significant fish barriers preventing fish migration.

Common name	Scientific name	Threat classification	Records	likelihood
Longfin eel	<i>Anguilla dieffenbachii</i>	At Risk - Declining	1	Medium
Shortfin eel	<i>Anguilla australis</i>	Not Threatened	8	High
Common bully	<i>Gobiomorphus cotidianus</i>	Not Threatened	7	High
Upland bully	<i>Gobiomorphus breviceps</i>	Not Threatened	9	High
Brown trout	<i>Salmo trutta</i>	Introduced	3	Medium
Unidentified eel	<i>Anguilla</i>	-	1	-
Unidentified bully	<i>Gobiomorphus</i>	-	1	-
No species recorded	-	-	2	-

- 47 The records in the NZFFD are approximately three to four kilometres downstream of the property. The waterways within the lower Waimakariri River catchment have been heavily modified and it is likely that throughout the catchment manmade barriers, such as overhanging culverts, are preventing less able climbers from getting upstream or stopping fish entirely. Based on the fish species recorded within the Ohoka Stream sub-catchment compared to the surrounding area, it is likely barriers within the Ohoka Stream sub-catchment are preventing poor climbers such as inanga (*Galaxias maculatus*) and black flounder/mohoao (*Rhombosolea retiaria*), which are recorded in neighbouring sub-catchments but not in the Ohoka Stream sub-catchment. Many of New Zealand's indigenous fish require access to and from

the sea to complete their life cycle. Therefore, the estimation of the fish community likely to be present within the property has the assumption that there are fish barriers preventing poor climbers, but not preventing fish entirely from reaching and completing their life cycle within the waterways of the property. With this assumption, the fish community present in the property is likely dominated by shortfin eel/tuna (*Anguilla australis*) and bully/kōkopu (*Gobiomorphus*) species. Even if there are more complex barriers preventing fish passage, eels have an incredible ability to navigate their way upstream where other species cannot (Franklin et al. 2018). It is possible that longfin eel (*Anguilla dieffenbachia*, At Risk – Declining) is also present.

48 Canterbury mudfish/kōwaro (*Neochanna burrowsius*) and Canterbury galaxias/kakawai (*Galaxias vulgaris*) have not been recorded within the sub-catchment or anywhere near the property and are very unlikely to be found within the property waterways.

49 No taonga fish or freshwater fauna species were recorded in the desktop survey.

ECOLOGICAL VALUES

Vegetation

50 Vegetation on the site is highly modified, the land has been cleared of any remnant indigenous vegetation and planted/over sown with exotic pasture grasses, crops and trees. The three, naturally occurring, indigenous plant species recorded are common throughout Canterbury and New Zealand and are considered to be of low ecological value.

51 Apart from the newly planted indigenous shrubland border, the vegetation and habitats are completely dominated by exotic species and all have low ecological value (including the indigenous shrubland). However, At Risk tōrea/South Island pied oystercatcher may forage and breed within the grassland areas and the exotic hedgerow habitat (and margins of grassland) may provide a small amount of potential lizard habitat to At Risk Canterbury grass skink.

52 A habitat assessment may be required to determine if targeted lizard surveys are necessary, as most of the potential lizard habitat is on the margins of the site and if lizards are present, within the site, they will be persisting in very low numbers.

Waterways

- 53 The ecological values of the streams and waterways on the site are low to moderate. The waterways within the property and the wider catchment have been degraded through loss of indigenous riparian vegetation and land use, and have been historically artificially modified with manmade structures installed instream (such as culverts) which act as barriers to migrating fish species.
- 54 Despite the degraded nature of the habitat, the waterways are still likely used by more tolerant fish species if they are able to reach the site. This most likely includes shortfin eel and bully species, but it is possible that At Risk, longfin eel/tuna are also present. To verify the freshwater fauna onsite, surveying would need to be conducted by either setting nets or eDNA detection. While the pond, waterways, and other boggy areas along the stream margins will provide foraging habitat for kawaupaka/little shag and tōrea/South Island pied oystercatcher, similar habitat is widespread in the surrounding area and not crucial to their survival.
- 55 It is not considered that the rezoning would result in significant adverse effects on the ecological values of freshwater habitats. However, a full survey of freshwater habitat and fauna values, should be undertaken prior to subdivision, to inform appropriate subdivision design and construction methodology. This will avoid adverse effects on waterways and identify opportunities to enhance ecological values.

Significance assessment

- 56 The site was evaluated against ecological significance criteria in the Canterbury Regional Policy Statement (CRPS, **Appendix 4**)¹⁶ and the National Policy Statement for Indigenous Biodiversity (NPS-IB, **Appendix 5**)¹⁷ The exotic hedgerows may be significant under the Rarity and Distinctiveness criteria of both the CRPS and NPS-IB, if At Risk Canterbury grass skink were found to be present. The exotic grassland/cropland may be significant under the Rarity and Distinctiveness criteria of the CRPS, if At Risk – Declining South Island pied oystercatcher were present and breeding in these areas. However,

¹⁶ CRPS; APPENDIX 3 - Criteria for determining significant indigenous vegetation and significant habitat of indigenous biodiversity.

¹⁷ NPS-IB; Appendix 1: Criteria for identifying areas that qualify as significant natural areas (SNAs)

these two habitats would not be significant under the same criteria of the NPS-IB, as South Island pied oystercatcher are widespread in at least three other regions¹⁸. Similarly, the waterways and pond may be significant under the Rarity and Distinctiveness criteria of the CRPS, if At Risk –long fin eel were found to be present, but not under NPS-IB criteria as this species is widespread in at least three other regions. The exception would be if two (or more) Threatened or At Risk fauna species were found to be present in the same habitat, as this exclusion only applies to a single species.

- 57 Despite these habitats potentially meeting the Rarity and Distinctiveness criteria, they are all widespread and common in the surrounding landscape and are not considered crucial to the survival of above mention species. A full assessment of each habitat against both criteria is provided in Appendix 4 and 5.

THE PROPOSAL

- 58 The Outline Development Plan (ODP; Aurecon 2023, Appendix 6), for the site has been reviewed, and feedback provided to ensure that the future site layout is appropriate from an ecological perspective. The ODP includes several features that are likely to provide ecological gains for biodiversity including naturalisation of the stream on the eastern boundary and a five metre riparian setback with indigenous planting along this stream and the stream offsite to the north (Ashworths Road boundary). Additionally, the 10 metre wide 'native landscape strip' around the site boundaries and planting within the two stormwater management reserves, will greatly increase indigenous vegetation cover on the site.

Stream Naturalisation

- 59 The ODP allows for the naturalisation of the spring fed stream on the site's eastern boundary, which is currently a channelised farm drain. Once rezoned, a detailed assessment of the stream reach should be undertaken and a Stream Naturalisation Plan prepared by a suitably qualified and experienced practitioner. This plan should include:
1. a detailed assessment of the stream reach to be naturalised;

¹⁸ Ministry for the Environment 2023. National Policy Statement for Indigenous Biodiversity. Wellington: Ministry for the Environment. 48 pp. Appendix 1: Criteria for identifying areas that qualify as significant natural areas (SNAs) 1 (3) What qualifies as an SNA

2. details of the potential ecological improvements. This may include:
 - a) reshaping the channel and banks;
 - b) adding substrate;
 - c) creating hydrological variation (e.g., riffles, runs and pools);
 - d) adding habitat – logs; and
 - e) indigenous aquatic plants; and riparian planting

Riparian planting

- 60 The ODP has provision for a five metre setback, that will be planted with indigenous vegetation. While the stream on the northern boundary is just outside the site, the five metre riparian setback is within, and will be planted with indigenous vegetation, if the site is developed.
- 61 These two streams currently have no riparian buffers within the site and the ecological values are likely to be low based on desktop analysis of the catchment. The proposed riparian setback and enhancement with indigenous planting has the potential to improve the ecological values within these sections of stream. The planting of riparian areas can act as a filter and decrease erosion and run-off, while improving or maintaining water quality. Planting can also boost the health of fish and animals living in and around the water. These green spaces also provide amenity values, ecological linkages and benefits to mobile fauna, leading to further increases in biodiversity.
- 62 The two springs along the eastern waterway will also gain protection. The northern spring will be buffered by the riparian planting zone and the intensive primary production setback area. While the southern spring will be protected by the riparian planting and a 10 metre no build setback under the pWDP rules. The five metre riparian planting buffer is considered appropriate given the small size of these springs.

Native landscape strip

- 63 The proposed 10 metre wide landscape strip around the site boundaries will be planted with ecologically appropriate indigenous species. This will include retaining the existing indigenous planting strip along Ashworths Road. This landscape strip is contiguous with the riparian zone along Ashworths Road, and the two stormwater management areas, and over time will increase the

indigenous vegetation and habitat on the site, further contributing to the ecological linkages and benefits to mobile fauna.

Stormwater management reserves

64 The stormwater management reserve to the east (Lot 2000), has a riparian stream corridor running through it and will contribute to ecological linkages, provided there is further indigenous planting in this area. The southern stormwater management reserve (Lot 2002), has less room for planting, but will include a five metre indigenous planting strip along the southern boundary. While five metres is narrow for a buffer zone, if planted densely it will reduce the maintenance requirements and add benefit by increasing the extent of indigenous species on the site. This provides ecological value in several ways, including food source and habitat to native birds and insects, as well as, a source for seed to be dispersed into the surrounding area – potentially increasing indigenous vegetation in surrounding landscape. Over time, the network of riparian corridors, naturalised waterways and connected greenspace, planted with ecologically appropriate species, will enhance the ecological values of the site and the wider area.

The two stormwater basins may also provide some benefits to water fowl and other mobile fauna, depending on the design and amount of water retention.

RELEVANT PLANNING PROVISIONS / STATUTORY REGULATIONS

National Environmental Standards for Freshwater

65 Resource Management (National Environmental Standards for Freshwater) Regulations (NES-F; 2020)¹⁹, protect urban and rural streams from in-filling and prohibits earthworks in, and around wetlands. Reclamation of the bed of any river (or infilling streams) is a discretionary activity, requiring resource consent (Regulation 57 NES-F 2020). Earthworks, vegetation clearance, or disturbance of natural wetlands, or within a 10 metre setback from a natural wetland, is heavily restricted and in most cases a Non-complying activity (Regulation 53, 54 NES-F 2020).

¹⁹ Ministry for the Environment 2023. National Policy Statement for Indigenous Biodiversity. Wellington: Ministry for the Environment. 48 pp

- 66 No natural inland wetlands were found on the site and the ODP indicates that the natural channelised waterways are to be retained and enhanced. Therefore, NES-F regulations should not constrain the rezoning.

National Policy Statement for Indigenous Biodiversity

- 67 The objective of the NPS-IB is to maintain 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)).
- 68 A full Assessment of Ecological Effects (AEE) for the proposed rezoning has not been undertaken. However, based on the current ODP (2023), it is not considered that the rezoning, would result in significant adverse effects on indigenous biodiversity. Furthermore, the proposed riparian setbacks and indigenous planting in these areas and around site boundaries, will likely result in a net gain for biodiversity.
- 69 Specified highly mobile fauna. The site contains potential habitat for South Island pied oystercatcher, which are listed as specified highly mobile fauna within Appendix 2 of the NPS-IB. However, as the surrounding landscape contains a large amount of similar habitat (pasture/farmland), the proposed development of the site would not have a significant impact on South Island pied oystercatcher, even if they were found to be using the site.
- 70 Taonga species. Indigenous shrubland plantings on the property contain a number of species listed as taonga species in Schedule 97 of the Ngāi Tahu Claims Settlement Act 1998, including karamu, kōwhai, kāpuka, and kānuka. However, no naturally occurring taonga plant species are present.
- 71 Two taonga birds were seen on site (pūkeko and paradise shelduck/pūtangitangi), and based on the desktop survey, it is considered likely that at least one additional taonga bird species (kawaupaka/little shag) might be present at times. Pūkeko and paradise shelduck are both widespread Not Threatened indigenous species. If present, kawaupaka/little shag would use the pond and waterways, and the riparian planting in these areas is likely to increase habitat for this species.
- 72 It is considered unlikely that taonga fish or freshwater fauna species are present.

Wildlife Act

73 Most indigenous vertebrate animal species are protected under the Wildlife Act (1953, s63 (1) (c)). In cases where proposed activities affect indigenous fauna and their habitats, 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 (and/or their habitats) can be disturbed, handled, translocated or killed. This includes clearance of exotic vegetation that provides habitat for indigenous fauna. Additionally, the submission of a species-specific management plan (for example, a Lizard Management Plan) would be required if indigenous lizards were found within vegetation on the site that was proposed for clearance.

Proposed Waimakariri District Plan

74 The stream that flows from the property and the stream that flows around the north-east boundary of the property are both tributaries of the Ohoka Stream. Ohoka Stream is not included in the proposed Waimakariri District Plan (WDP) Natural Character schedule (NATC-SCHED) of freshwater bodies, but it is a tributary of the Cust and Kaiapoi Rivers which both are included (NATC-SCHED2). The plan states that:

75 “Not all freshwater bodies have been investigated. Those investigated have only been for a limited number of attributes, such as high ecological values, cultural or spiritual values, or are close to their natural state, and only for a limited area. All natural freshwater bodies are important and even if they are not presently scheduled, it does not mean that they do not have natural character values. These will be investigated during the life of the District Plan.”

76 While the two streams contribute to the natural character, it is considered unlikely that they would become scheduled streams given their small size and low to medium ecological values. Unscheduled streams require a minimum five metre riparian setback from any development.

CONCLUSION

77 The proposed rezoning site is actively grazed and cultivated farmland. An Outline Development Plan (ODP, Aurecon 2023) has been developed for the site, with 73 hectares proposed for 'large lot residential' zoning and an adjoining one and half hectare lot to be used for stormwater management.

There is historical evidence of wetlands in the east and north of the site and a number of old river channels and shallow depressions are present in this area. Several boggy areas were also observed around gates and cattle troughs across the site. Investigations found that these depressions and boggy areas were not natural inland wetlands under the NPS-FM definition.

- 78 A desktop assessment of indigenous fauna and habitat values found that the habitats on the site were all highly modified and degraded, but still provide potential habitat for at least three At Risk indigenous bird species and one At Risk indigenous lizard species. Additionally, the streams on and around the site provide potential habitat for at least one At Risk freshwater fish species.
- 79 If At Risk lizards are found to be present, habitats on the site could be considered ecologically significant under both CRPS and NPS-IB criteria. If At Risk bird and fish species are found to be present, habitats on the site could be considered ecologically significant under CRPS criteria but not the NPS-IB, unless multiple At Risk bird and fish species were present in the same habitat. Further surveys would be required to determine the presence of any At Risk fauna found in the desktop survey, and even if found, the habitat values remain low due to the highly modified nature of the site.
- 80 Based on these findings it is recommended that if rezoning occurs the waterways and springs on the site are protected and enhanced with appropriate indigenous riparian planting, as detailed in the ODP. Further gains could be made through indigenous planting in the proposed stormwater management reserves.
- 81 Prior to any subdivision consent and development works, additional surveys are recommended for indigenous lizards, nesting birds, and freshwater fauna. Provided these recommendations are followed the ODP proposed for the site, would result in at least no net loss of biodiversity, and most likely, a biodiversity net gain.
- 82 Thank you for the opportunity to present my evidence.

Roland Payne
5 March 2024

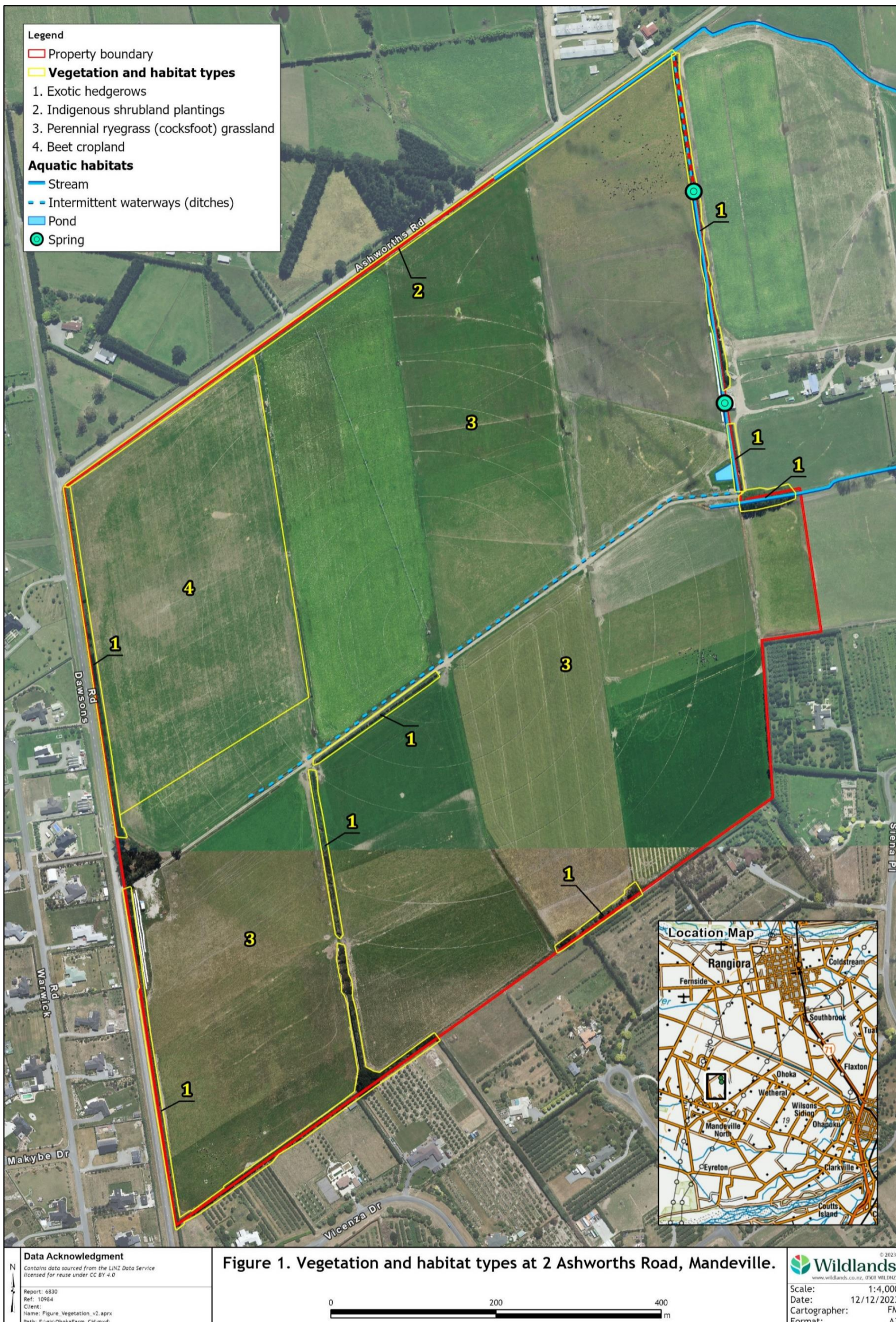
APPENDIX 1: Plant species recorded during the survey

Species marked with * have been planted on the site

Species name	Common name	Growth form	Species status
<i>Acacia melanoxylon</i>	Blackwood	Tree or shrub	Exotic
<i>Achillea millefolium</i>	Yarrow	Non vascular	Exotic
<i>Agrostis capillaris</i>	Browntop	Grass	Exotic
<i>Austroderia richardii*</i>	Toetoe	Non vascular	Indigenous endemic
<i>Bellis perennis</i>	Bellis daisy	Dicot herb	Exotic
<i>Beta vulgaris</i>	Beet	Shrub	Exotic
<i>Bromus catharticus</i>	Prairie grass	Grass	Exotic
<i>Callitriche stagnalis</i>	Water starwort	Dicot herb	Exotic
<i>Capsella bursa-pastoris</i>	Shepherd's purse	Dicot herb	Exotic
<i>Cerastium fontanum</i>	Mouse-ear chickweed	Dicot herb	Exotic
<i>Chamaecytisus palmensis</i>	Tree lucerne	Tree	Exotic
<i>Cirsium vulgare</i>	Scotch thistle	Dicot herb	Exotic
<i>Conium maculatum</i>	Hemlock	Dicot herb	Exotic
<i>Coprosma Dumosa*</i>	Mikimiki	Tree or shrub	Indigenous endemic
<i>Coprosma propinqua*</i>	Mingimingi	Tree or shrub	Indigenous endemic
<i>Coprosma robusta*</i>	Karamu	Tree or shrub	Indigenous endemic
<i>Coprosma rugosa*</i>	Mikimiki	Tree or shrub	Indigenous endemic
<i>Cordyline australis*</i>	Cabbage tree	Tree or shrub	Indigenous endemic
<i>Cortaderia selloana</i>	Pampas grass	Grass	Exotic
<i>Crepis capillaris</i>	Hawksbeard	Dicot herb	Exotic
<i>Cupressus macrocarpa</i>	Macrocarpa	Tree	Exotic
<i>Dactylis glomerata</i>	Cocksfoot	Grass	Exotic
<i>Dryopteris filix-mas</i>	Male fern	Fern	Exotic
<i>Erigeron sumatrensis</i>	Broad-leaved fleabane	Dicot herb	Exotic
<i>Erythranthe guttata</i>	Monkey musk	Grass	Exotic
<i>Eucalyptus species</i>	Eucalyptus	Tree	Exotic
<i>Festuca rubra</i>	Chewings fescue	Grass	Exotic
<i>Galium aparine</i>	Cleavers	Dicot herb	Exotic
<i>Geranium molle</i>	Doves foot cranesbill	Dicot herb	Exotic
<i>Glyceria declinata</i>	Blue sweet grass	Grass	Exotic
<i>Griselinia littoralis*</i>	Broadleaf	Tree	Indigenous endemic
<i>Holcus lanatus</i>	Yorkshire fog	Grass	Exotic
<i>Hydrocotyle moschata</i>	Hairy pennywort	Dicot herb	Indigenous endemic
<i>Hydrocotyle novae-zeelandiae</i>	Pennywort	Dicot herb	Indigenous endemic
<i>Kunzea robusta*</i>	Kānuka	Tree or shrub	Indigenous endemic
<i>Lemna minor</i>	Common duckweed	Dicot herb	Indigenous non-endemic
<i>Leucanthemum vulgare</i>	Oxeye daisy	Non vascular	Exotic
<i>Lolium perenne</i>	Ryegrass	Grass	Exotic
<i>Myosotis laxa</i>	Water forget-me-not	Dicot herb	Exotic
<i>Nasturtium officinale</i>	Watercress	Dicot herb	Exotic
<i>Olearia avicenniifolia*</i>	Akeake	Tree or shrub	Indigenous endemic
<i>Phormium tenax*</i>	Harakeke	Grass	Indigenous endemic
<i>Pinus radiata</i>	Radiata pine	Tree or shrub	Exotic
<i>Pittosporum tenuifolium*</i>	Kōhūhū	Tree or shrub	Indigenous endemic
<i>Plantago lanceolata</i>	Narrow-leaved plantain	Dicot herb	Exotic
<i>Plantago major</i>	Broad-leaved plantain	Dicot herb	Exotic
<i>Plagianthus regius*</i>	Mānatu, lowland ribbonwood	Tree or shrub	Indigenous endemic
<i>Poa annua</i>	Annual poa	Grass	Exotic
<i>Poa pratensis</i>	Kentucky blue grass	Grass	Exotic
<i>Populus nigra</i>	Lombardy poplar	Tree	Exotic
<i>Ranunculus repens</i>	Creeping buttercup	Dicot herb	Exotic
<i>Raphanus raphanistrum</i>	Wild radish	Low shrub	Exotic
<i>Rumex acetosella</i>	Sheep's sorrel	Dicot herb	Exotic
<i>Rumex crispus</i>	Curled dock	Dicot herb	Exotic
<i>Rumex obtusifolius</i>	Broad-leaved dock	Dicot herb	Exotic
<i>Sagina procumbens</i>	Pearlwort	Dicot herb	Exotic
<i>Salix x fragilis</i>	Crack willow	Tree or shrub	Exotic
<i>Salix species</i>	Willow	Tree or shrub	Exotic

Species name	Common name	Growth form	Species status
<i>Sambucus nigra</i>	Elder	Shrub	Exotic
<i>Sisymbrium officinale</i>	Wild mustard, hedge mustard	Dicot herb	Exotic
<i>Solanum chenopodioides</i>	Velvety nightshade	Dicot herb	Exotic
<i>Solanum nigrum</i>	Black nightshade	Dicot herb	Exotic
<i>Sonchus asper</i>	Prickly puha	Dicot herb	Exotic
<i>Sophora microphylla</i> *	Kōwhai	Tree or shrub	Indigenous endemic
<i>Stellaria media</i>	Chickweed	Dicot herb	Exotic
<i>Taraxacum officinale</i>	Dandelion	Dicot herb	Exotic
<i>Tripleurospermum inodorum</i>	Scentless chamomile	Non vascular	Exotic
<i>Trifolium pratense</i>	Red clover	Dicot herb	Exotic
<i>Trifolium repens</i>	White clover	Dicot herb	Exotic
<i>Ulex europaeus</i>	Gorse	Shrub	Exotic
<i>Urtica urens</i>	Nettle	Dicot herb	Exotic
<i>Veronica persica</i>	Scrambling speedwell	Dicot herb	Exotic

APPENDIX 2: Figure 1 Vegetation and habitats



APPENDIX 3: Indigenous and exotic bird species records

Table A3-1: Indigenous and exotic bird species records within a five kilometre radius of the Ohoka Farm between 1 January 2017 and 30 April 2023. Threat status as per Robertson et al. 2021.

Common Name(s)	Scientific Name	Threat Classification / Taonga	Likelihood	Preferred Habitats
Indigenous				
Black-fronted tern/tarapirohe	<i>Chlidonias albostrigatus</i>	Threatened – Nationally Endangered	Unlikely	Riverbeds, waterways, riverflats and farmlands by rivers during breeding. More coastal habitats, including coastal pasture, during autumn and winter.
Black-billed gull/tarāpuka	<i>Chroicocephalus 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.
Little shag/kawaupaka	<i>Microcarbo melanoleucos brevirostris</i>	At Risk – Relict / Taonga	Likely	Sheltered coastal waters, harbours, estuaries, waterways, dams and lakes up to subalpine zone. Often breed on offshore islands.
Australian coot	<i>Fulica atra australis</i>	At Risk – Naturally Uncommon	Unlikely	Shallow, sheltered bays in freshwater fringed with submerged vegetation, reeds and raupo beds.
Australasian shoveler/kuruwhengi	<i>Spatula rhynchotis</i>	Not Threatened	Unlikely	Fertile and shallow wetlands, waterways, sewage ponds.
Pūkeko	<i>Porphyrio melanotus</i>	Not Threatened / Taonga	Seen	Waterways, grassland, wetland, grassland rough damp pasture.
Black swan/kakīānau	<i>Cygnus atratus</i>	Not Threatened	Unlikely	Lowland coastal lakes and lagoons, estuaries.
Grey warbler/riroriro	<i>Gerygone igata</i>	Not Threatened	Unlikely	Temperate forest, scrubland, pasture, and urban environments. From sea level to subalpine zone.

Common Name(s)	Scientific Name	Threat Classification / Taonga	Likelihood	Preferred Habitats
Grey teal/tētē-moroiti	<i>Anas gracilis</i>	Not Threatened	Unlikely	Shallow coastal lakes and lagoons, often with margins of swamp and willow. Often feed on estuaries and exposed mudflats.
Southern black-backed gull/karoro	<i>Larus dominicanus dominicanus</i>	Not Threatened / Taonga	Unlikely	Estuaries, harbours, open coastlines, rivers, lakes, wet pasture, lambing paddocks, farmland, rubbish tips and urban environments.
Grey duck – mallard hybrid	<i>Anas platyrhynchos x superciliosa</i>	Not Threatened	Likely	Wetlands, lakes, slow flowing rivers, calm tidal waters.
Spur-winged plover	<i>Vanellus miles</i>	Not Threatened	Likely	Arable land and pasture, riverbeds, coastal and lake shores, urban parks.
Bellbird/korimako	<i>Anthornis melanura melanura</i>	Not Threatened / Taonga	Possible	Indigenous forest and scrubland, exotic plantations, river margins and urban environments with indigenous bush (e.g., parks etc.).
South Island fantail/pīwakawaka	<i>Rhipidura fuliginosa</i>	Not Threatened	Likely	Forest, scrubland (second growth), farmland with scattered trees, suburban environments.
New Zealand scaup/pāpango	<i>Aythya novaeseelandiae</i>	Not Threatened	Unlikely	Large deep lakes, infrequently found on shallow coastal lakes, lagoons and rivers.
Paradise shelduck/pūtangitangi	<i>Tadorna variegata</i>	Not Threatened / Taonga	Seen	Grassland, pond, tussockland, farmland, lakes, riverbeds.
Pied stilt/poaka	<i>Himantopus leucocephalus leucocephalus</i>	Not Threatened / Taonga	Possible	Riverbeds, estuaries, wetlands, paddocks, lake margins, inland lakes, coastal lagoons.
New Zealand kingfisher/kōtare	<i>Todiramphus sanctus</i>	Not Threatened / Taonga	Possible	Coastal bush, tidal estuaries, mangrove swamps, farmland with scattered trees, inland rivers and lakes, indigenous and exotic forests.
Silvereye/tauhou	<i>Zosterops lateralis lateralis</i>	Not Threatened	Likely	Indigenous forest, scrubland, exotic plantations, suburban gardens.

Common Name(s)	Scientific Name	Threat Classification / Taonga	Likelihood	Preferred Habitats
Swamp harrier/kāhu	<i>Circus approximans</i>	Not Threatened / Taonga	Possible	Open country, wetlands, farmlands, grasslands, high-country tussockland, forest margins, riverbeds.
Welcome swallow/warou	<i>Hirundo 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	Seen	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 also.
Canada goose	<i>Branta canadensis</i>	Introduced and Naturalised	Unlikely	High country lakes and rivers, dry tussockland, estuaries, coastal lakes.
Chaffinch	<i>Fringilla coelebs</i>	Introduced and Naturalised	Seen	Hedgerows, grassland, indigenous and exotic forests, farmland. Sea level to alpine scrub.
Dunnock	<i>Prunella modularis</i>	Introduced and Naturalised	Seen	Hedgerows, grassland, indigenous and exotic forests, scrubland, suburban environments. Sea level to alpine scrub.
Eurasian blackbird	<i>Turdus merula</i>	Introduced and Naturalised	Seen	Suburban environments, paddocks, hedgerows, grassland, scrub and indigenous forests.
Eurasian skylark	<i>Alauda arvensis</i>	Introduced and Naturalised	Seen	Open country, grassland, dunes, farmland, tussockland. Sea level to subalpine herbfields.

Common Name(s)	Scientific Name	Threat Classification / Taonga	Likelihood	Preferred Habitats
Goldfinch	<i>Carduelis carduelis</i>	Introduced and Naturalised	Likely	Low altitudes. Farmlands and suburban environments.
Greenfinch	<i>Carduelis chloris</i>	Introduced and Naturalised	Likely	Farmlands, pine plantations, hedgerows grasslands and suburban environments.
Starling	<i>Sturnus vulgaris</i>	Introduced and Naturalised	Seen	Hedgerows, grassland, farmland, rural and suburban environments, forest edges.
Greylag goose	<i>Anser anser</i>	Introduced and Naturalised	Unlikely	Lakes, estuaries, pastoral farmland, grassland.
House sparrow	<i>Passer domesticus</i>	Introduced and Naturalised	Likely	Arable farmland, rural and urban environments.
Common redpoll	<i>Acanthis flammea</i>	Introduced and Naturalised	Likely	Farmland, tussockland, coastal dunes, forest and scrub margins, subalpine scrub.
Little owl	<i>Athene noctua</i>	Introduced and Naturalised	Possible	Hedgerows, rural and semi-rural buildings, farmland, drier coastal areas, stands of indigenous and exotic trees.
Mallard	<i>Anas platyrhynchos</i>	Introduced and Naturalised	Likely	Wetlands, ponds, rivers and estuaries in both rural and urban environments.
Common pheasant	<i>Phasianus colchicus</i>	Introduced and Naturalised	Unlikely	Grasslands, arable and pastoral farmland, exotic forestry, deciduous woodland, coastal shrubland and road verges.
Rock pigeon	<i>Columba livia</i>	Introduced and Naturalised	Likely	Arable farmland, rural and urban environments.
Song thrush	<i>Turdus philomelos</i>	Introduced and Naturalised	Seen	Hedgerows, farmland, hedgerows, orchards and suburban environments.
Yellowhammer	<i>Emberiza citrinella</i>	Introduced and Naturalised	Likely	Farmland, orchards, open tussockland from sea level to subalpine herbfields.

APPENDIX 4: EVALUATION OF THE ASHWORTHS ROAD SITE USING THE ECOLOGICAL SIGNIFICANCE CRITERIA IN THE CANTERBURY REGIONAL POLICY STATEMENT

Ecological Significance Criteria	Exotic hedgerows	Indigenous shrubland plantings	Exotic grassland / cropland ²⁰	Wetland	Pond	Waterways
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
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
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
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.	May meet threshold Potential habitat for At Risk indigenous lizard (Canterbury grass skink) identified.	Does not meet threshold	May meet threshold Potential breeding habitat for At Risk – Declining South Island pied oystercatcher	May meet threshold Potential breeding habitat for At Risk – Declining South Island pied oystercatcher	Does not meet threshold	May meet threshold Potential habitat for At Risk indigenous longfin eel (Anguilla dieffenbachia)
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
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
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 ¹ .	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
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
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

²⁰ Exotic grassland and cropland habitats (perennial ryegrass-(cocksfoot) grassland, beet cropland) have been assessed together, as due to the rotational grazing / cropping land use pattern, these habitats overlap.

APPENDIX 5 EVALUATION OF THE ASHWORTHS ROAD 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:
 - (a) representativeness:
 - (b) diversity and pattern:
 - (c) rarity and distinctiveness:
 - (d) 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:
 - (a) the species is rare within the region or ecological district where the area is located; or
 - (b) 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:
 - (a) the species is rare within the region or ecological district where the area is located; or
 - (b) 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:
 - (a) its ecological district; and
 - (b) for the rarity assessment only, its ecological district, its region and the national context.

3 Manner and form of assessment

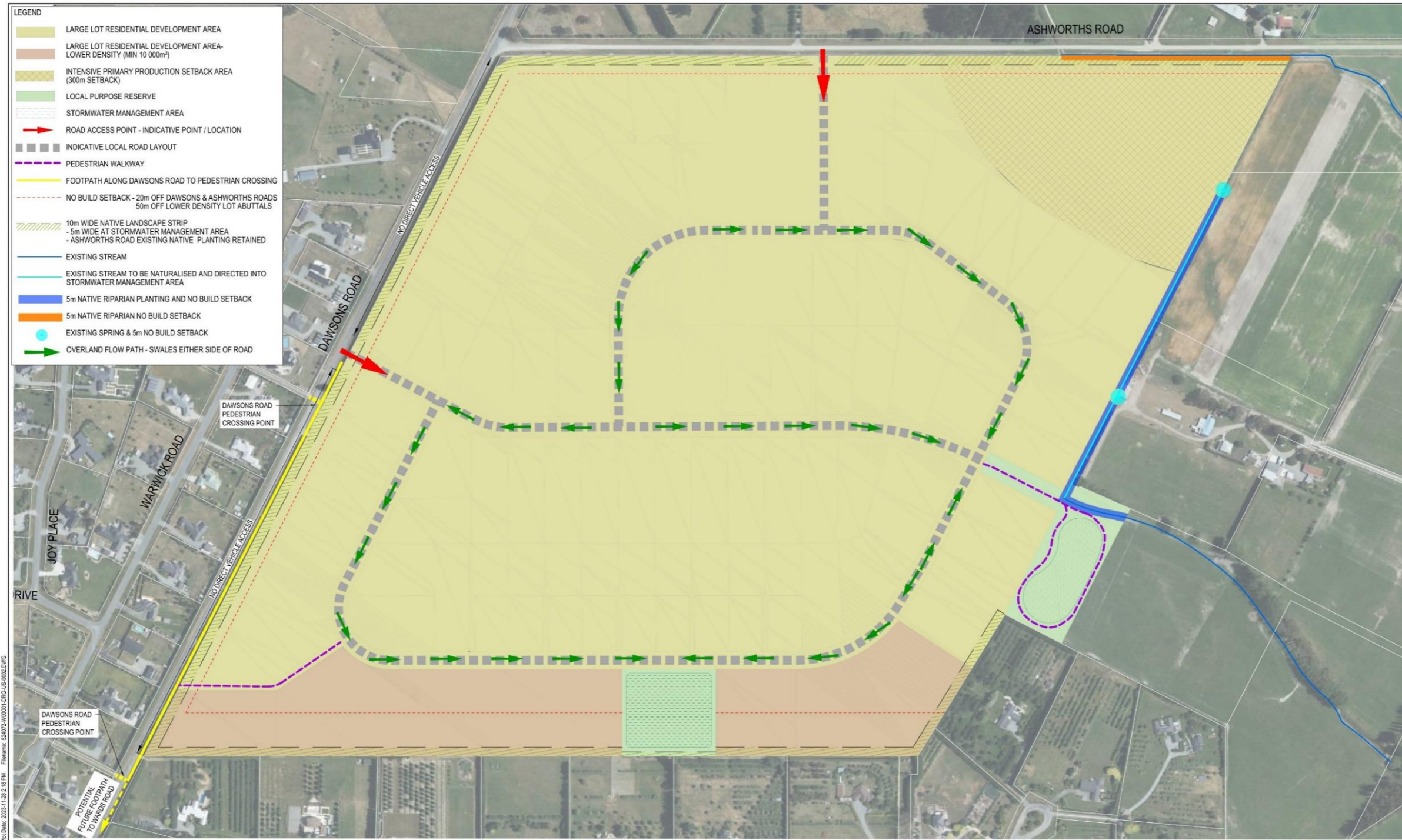
- (1) Every assessment must include at least:
 - (a) a map of the area; and
 - (b) a general description of its significant attributes, with reference to relevant criteria (as specified below); and
 - (c) a general description of the indigenous vegetation, indigenous fauna, habitat, and ecosystems present; and
 - (d) additional information, such as the key threats, pressures, and management requirements; and
 - (e) 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	Exotic hedgerows	Indigenous shrubland plantings	Exotic grassland / cropland ²¹	Wetland	Pond	Waterways
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> <ul style="list-style-type: none"> a) indigenous vegetation that has ecological integrity that is typical of the character of the ecological district: b) 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
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> <ul style="list-style-type: none"> a) at least a moderate diversity of indigenous species, vegetation, habitats of indigenous fauna or communities in the context of the ecological district: b) presence of indigenous ecotones, complete or partial gradients or sequences. 	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold	Does not meet threshold

²¹ Exotic grassland and cropland habitats (perennial ryegrass-(cocksfoot) grassland, beet cropland) have been assessed together, as due to the rotational grazing / cropping land use pattern, these habitats overlap.

Ecological Significance Criteria	Exotic hedgerows	Indigenous shrubland plantings	Exotic grassland / cropland ²¹	Wetland	Pond	Waterways
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> <ol style="list-style-type: none"> provides habitat for an indigenous species that is listed as Threatened or At Risk (declining) in the New Zealand Threat Classification System lists: an indigenous vegetation type or an indigenous species that is uncommon within the region or ecological district: an indigenous species or plant community at or near its natural distributional limit: indigenous vegetation that has been reduced to less than 20 per cent of its prehuman extent in the ecological district, region, or land environment: indigenous vegetation or habitat of indigenous fauna occurring on naturally uncommon ecosystems: the type locality of an indigenous species: the presence of a distinctive assemblage or community of indigenous species: the presence of a special ecological or scientific feature. 	<p>May meet threshold Potential habitat identified for At Risk – Declining Canterbury grass skink – only found to two reigns (Canterbury and Westland).</p>	<p>Does not meet threshold</p>	<p>May meet threshold Potential breeding habitat for At Risk – Declining South Island pied oystercatcher</p> <p>However, species widespread /common in more than three reigns (refer above 1 (2) What qualifies as SNA)</p>	<p>May meet threshold Potential breeding habitat for At Risk – Declining South Island pied oystercatcher</p> <p>However, species widespread /common in more than three reigns (refer above 1 (2) What qualifies as SNA)</p>	<p>Does not meet threshold</p>	<p>May meet threshold Potential habitat for At Risk – Declining longfin eel</p> <p>However, species widespread /common in more than three reigns (refer above 1 (2) What qualifies as SNA)</p>
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> <ol style="list-style-type: none"> the characteristics that help maintain indigenous biodiversity (such as size, shape, and configuration) in the area; and 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><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> <ol style="list-style-type: none"> at least moderate size and a compact shape, in the context of the relevant ecological district: well-buffered relative to remaining habitats in the relevant ecological district: provides an important full or partial buffer to, or link between, one or more important habitats of indigenous fauna or significant natural areas: important for the natural functioning of an ecosystem relative to remaining habitats in the ecological district. 	<p>Does not meet threshold</p>	<p>Does not meet threshold</p>	<p>Does not meet threshold</p>	<p>Does not meet threshold</p>	<p>Does not meet threshold</p>	<p>Does not meet threshold</p>

APPENDIX 6 Mandeville North-East Development, Outline Development Plan



REV	DATE	REVISION DETAILS	REV	DRAWN	DESIGNED	VERIFIED	APPROVED
A	2023-10-18	ISSUE FOR CONSENT	A	R DAWSON	J TRIST	J TRIST	B TOMS
B	2023-11-28	REISSUE FOR CONSENT	B	R DAWSON	J TRIST	J TRIST	B TOMS

PREPARED BY **aurecon** www.aurecongroup.com

CLIENT **OHOKA FARM HOLDINGS LIMITED**

Coordinate system: MTP/L 2000
Height datum: -

SCALE 1:2000

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CONSTRUCTION STATUS		PROJECT	
NOT FOR CONSTRUCTION		OHOKA FARM HOLDINGS - ASHWORTHS ROAD	
DRAWN BY R DAWSON		TITLE	
DESIGNED BY J TRIST		MANDEVILLE NORTH-EAST DEVELOPMENT AREA OUTLINE DEVELOPMENT PLAN	
STATUS		DOCUMENT CODE	
CONCEPT DESIGN AND PLANNING	A2	524072-W00001-DRG-US-0002	
DOCUMENT STATE	PUBLISHED	SCALE	REV
		AS SHOWN	B