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Environmental Consultants

Whenuapai Green Plan Change

Ecological Impact Assessment

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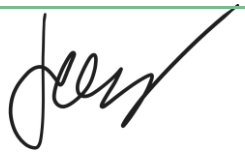
Author(s)		
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Cover photo: View of Whenuapai Green plan change area looking north from the centre of the site (taken by Viridis Limited, January 2023).

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1 INTRODUCTION

Neil Construction Limited (NCL) is applying to Auckland Council for a Private Plan Change (PPC) to rezone the land at 98, 100 and 102 Totara Road, Whenuapai ('the site'; Figure 1). The PPC seeks to rezone approximately 16.4 ha of land from a Future Urban Zone (FUZ) to Residential - Mixed Housing Urban (MHU) zone in an integrated and comprehensive manner. The site is bordered by Totara Road on the northern and western sides, McCaw Avenue to the south, and the Royal New Zealand Airforce (RNZAF) Base Auckland to the east. This report describes the existing ecological values of the site, including terrestrial and freshwater, and assesses the potential effects of the proposed PPC on those values.

An ecological assessment of the site and neighbouring environment identified the presence of permanent and intermittent watercourses, natural inland wetlands, and one small area of indigenous vegetation along the reach of the permanent watercourse and an area of planted native vegetation just immediately outside of the site boundaries. The plan change will enable the transition of land within the site from semi-rural land use to urban under the proposed MHU zone. Precinct provisions will be provided with the plan change. The precinct will facilitate the establishment of infrastructure to support future development and ensure it is integrated with future urban development of the wider area.

Questions and responses relevant to ecology as requested under clause 23 of Schedule 1 of the Resource Management Act 1991 are provided in Appendix A.

The overarching approach of this Ecological Impact Assessment (EcIA) is to ascertain the existing terrestrial and freshwater ecological values on the site and determine the impact of the proposed land use change and associated activities on those values. Recommended measures to avoid, remedy or mitigate adverse effects on terrestrial and freshwater ecology are provided as required. Recommendations for addressing anticipated residual adverse effects on the ecological values of the site through enhancement are also made where applicable.

Figure 1: Boundaries of plan change area in context of wider Whenuapai area.

2 METHODOLOGY

2.1 Overview

The assessment included a desktop review and site visit undertaken by a suitably qualified ecologist. The desktop review involved an examination of current and historical aerial imagery of the site, during which factors such as changes in vegetation and surface water were noted. A review of data on Auckland Council's Geomaps (such as current biodiversity layers, predicted watercourses and site topography) was also undertaken. Watercourse and wetland memorandums prepared by Bioresearches prepared for the previous Covid-19 Fast Track application for the site were also reviewed (Bioresearches 2020 & 2021).

A site assessment was undertaken on 24th of January 2024, during which the presence and extent of freshwater and terrestrial features within the property and surrounding area were recorded, and the quality of associated habitat (if any) was visually assessed in accordance with the methodology detailed in Sections 2.2 through 2.3, below.

2.2 Terrestrial Ecology

The vegetation within the property was assessed during the site visit. The botanical value of both exotic and native vegetation was recorded, and the quality, extent and connectivity of vegetation were considered. Terrestrial fauna habitat was assessed qualitatively, in conjunction with database reviews (e.g., Department of Conservation's ARDs, Bioweb, eBird and iNaturalist) and considered indigenous lizards, birds, and bats. A desktop review of local bat and herpetofauna records from specific databases was undertaken. Opportunistic sightings of avifauna were recorded, and the conservation status of the species, as defined by Robertson et al. (2021), was noted.

The ecological value of terrestrial features was determined in accordance with the methodology prescribed in the Environment Institute of Australia and New Zealand (EIANZ) guidelines (refer to Section 2.4).

2.3 Freshwater Ecology

During the site assessment, the presence and extent of streams and wetlands on site (if any) were noted, and the quality of any freshwater habitat was visually assessed. Watercourses were classified as per the Auckland Unitary Plan Operative in Part (AUP-OP) definitions to determine, in accordance with the definitions in this plan, the ephemeral, intermittent or permanent status of the watercourse. Freshwater habitat was assessed, noting ecological aspects such as channel modification, hydrological heterogeneity, riparian vegetation extent, substrate type and any fish or macroinvertebrate habitat observed. Riparian and catchment information was also reviewed, and the NIWA New Zealand Freshwater Fish Database (NZFFD) was examined for fish species potentially present within the site.

Where appropriate, potential wetland areas were assessed in accordance with wetland delineation protocols (MfE, 2022a; Clarkson, 2014) and pasture exclusion methodology (MfE, 2022b) to determine if an area met the regulatory definition of 'natural inland wetland' (NPS-FM 2020). Potential wetland areas were assessed based on the prevalence of certain vegetation species and their indicator status ratings, as defined by Clarkson et al. (2021):

- Obligate wetland (OBL) vegetation, which almost always is a hydrophyte (a plant that only grows in wet environments), rarely found in uplands (non-wetland areas).

- Facultative wetland (FACW) vegetation, which usually is a hydrophyte but can occasionally be found in uplands.
- Facultative (FAC) vegetation, which is commonly either a hydrophyte or non-hydrophyte.
- Facultative upland (FACU) vegetation, which is occasionally a hydrophyte but is usually found in uplands.
- Upland (UPL) vegetation, which is rarely a hydrophyte and is almost always found in uplands.

Where the dominance or prevalence tests showed unclear results, hydric soils and hydrology tests were undertaken in accordance with the methodology outlined in MfE (2022a) and Clarkson (2014). Wetland assessments also included identifying native and exotic vegetation species, examining the structural tiers within wetland areas, and assessing the quality and abundance of aquatic habitats. Signs of wetland degradation, such as pugging and grazing from stock access, structures such as culverts impeding hydrological function, and weed infestation were also noted.

The ecological value of freshwater features was determined in accordance with the methodology prescribed in the EIANZ guidelines (refer to Section 2.4).

2.4 Ecological Impact Assessment

The overarching approach of this analysis and reporting is to ascertain the existing ecological values on the site and determine the impact of the proposed plan change on those values.

The ecological value of the site, relating to species, communities, and systems, was determined as per the EIANZ Ecological Impact Assessment guidelines (EcIAG) for use in New Zealand (Roper-Lindsay et al., 2018). This report also identifies statutory guidelines and regulations with respect to ecology (such as watercourses, wetlands, high-value vegetation, and habitats) where relevant to the proposed development. Using this framework, the EcIAG describes a simple ranking system to assign value to species as well as other matters of ecological importance, such as species assemblages and levels of organisation. The overall ecological value is then determined on a scale from '*Negligible*' to '*Very High*'.

Criteria for describing the magnitude of effects are given in Chapter 6 of the EcIAG. The level of effect can then be determined by combining the value of the ecological feature/attribute with the score or rating for the magnitude of effect to create a criterion for describing the level of effects (Table 1). A moderate level of effect requires careful assessment and analysis of the individual case. For moderate levels of effects or above, measures need to be introduced to avoid through design, or appropriate mitigation needs to be addressed (Roper-Lindsay et al., 2018).

Table 1. Criteria for describing the level of effects (from Roper-Lindsay et al. 2018).

Magnitude of Effect	**Ecological Value**				
	Very High	**High**	**Moderate**	**Low**	**Negligible**
Very High	*Very High*	*Very High*	*High*	*Moderate*	Low
High	*Very High*	*Very High*	*Moderate*	Low	Very Low
Moderate	*High*	*High*	*Moderate*	Low	Very Low
Low	*Moderate*	Low	Low	Very Low	Very Low
Negligible	Low	Very Low	Very Low	Very Low	Very Low
Positive	Net Gain	Net Gain	Net Gain	Net Gain	Net Gain

Notes: Where text is italicised, it indicates 'significant effects' where mitigation is typically required.

3 SITE DESCRIPTION

3.1 Site Context

3.1.1 Ecological District

The site is located in the Tāmaki Ecological District. The district is characterised by harbours and coastal areas with a strong influence from historic volcanic activity. Significant vegetation clearance has occurred, and the district is now dominated by urban areas. The Tāmaki Ecological District would have historically been heavily forested.

Historically (pre-human), the site would have likely contained the ecosystem type 'Pūriri forest' (WF7). Native flora characteristic of this ecosystem type would have included pūriri (*Vitex lucens*) with occasional kahikatea (*Dacrycarpus dacrydioides*), kohekohe (*Didymocheton spectabilis*) and karaka (*Corynocarpus laevigatus*), which could support a diverse community of invertebrates, amphibians, reptiles, birds, and bats (Singers et al., 2017). However, a review of historical aerial imagery indicates that the site, and much of the surrounding landscape, was cleared over 80 years ago for agricultural purposes (Figure 2).

3.1.2 Local Context

Currently, the site contains a small number of residential dwellings, associated outbuildings, and large areas of field/pasture. Land use within the site has historically been dominated by agricultural activities.

The wider area is semi-rural, with the RNZAF Base Auckland bordering the site on the east and medium density residential development on the southern boundary. It is expected that residential development will continue to occur around the site. There are no Significant Ecological Areas (SEA) within the site. The closest terrestrial SEA is located approximately 1,300 m to the southwest of the site, while the closest SEA is a marine SEA that acts as the receiving environment for the streams on site and located approximately 165 m North of the site. The key ecological features on-site and the surrounding landscape are presented in Figure 3.

Figure 2: Historical aerial imagery of the site, dated 1940 (source: Retrolens).

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Figure 3: Key Ecological Features

98 & 100-102 Totara Road

Neil Construction Limited

Legend

- Native plantings
- Watercourses
- Intermittent
- Artificial
- Permanent
- Ephemeral
- Culvert
- Pipe
- Wetlands

SOURCES

State map source and aerial date

DISCLAIMER:
This map/plan is not an engineering draft. This map/plan is illustrative only and all information should be independently verified on site before taking any action.

SCALE **1:3,500** **@ A4**

PROJECT NO.	10096
DRAWN BY:	T.Y
DATE:	12 February 2024

4 TERRESTRIAL ECOLOGY

4.1 Vegetation

Vegetation within the site can be characterised as garden and amenity planting, shelterbelts, and riparian vegetation. Managed pasture was the dominant vegetation type.

Vegetation other than grass/pasture was not common throughout the site and was generally concentrated around the riparian yard of the intermittent streams (Figure 4) and the residential dwellings on the site.

Indigenous vegetation on the site was limited to a small area of the permanent stream (P1) riparian margin that crosses through the eastern corner of the site and scattered species elsewhere. Native species identified within the site included cabbage tree (*Cordyline australis*), mamaku (*Cyathea medullaris),* karamu (*Coprosma robusta*), kiokio (*Parablechnum novae-zelandiae*), cabbage tree (*Cordyline australis*), mānuka (*Leptospermum scoparium*), mahoe (*Melicytus ramiflorus*) and flax (*Phormium tenax*). The freshwater values of this area are discussed in section 2.3

Most of the site was dominated by exotic species such as red clover (*Trifolium pratense*), white clover (*Trifolium repens*), kikuyu grass (*Pennisetum clandestinum*), Yorkshire fog (*Holcus lanatus*), creeping buttercup (*Ranunculus repens*), scattered soft rush (*Juncus effusus*), and bindweed (*Convolvulus sp.*).

In addition, the site had many listed pest plants[1] established such as woolly nightshade (*Solanum mauritianum*), Chinese privet (*Ligustrum sinense*), montbretia (Crocosmia × crocosmiiflora), gorse (*Ulex sp.*), brushwattle (*Paraserianthes lophantha*), and Japanese honeysuckle (*Lonicera japonica*).

Just outside the site but within the surrounding area was a small pocket of native planting (1000 m^2) past the northeast corner of the site (Figure 3).

The ecological and botanical value of the vegetation within the site was assessed as **low** due to the large proportion of non-natives and weeds.

a)

b)

Figure 4: a) Stand of exotic trees and b) Soft rush established on banks of intermittent stream/wetland margin.

[1] As listed in the Auckland Regional Pest Management Plan 2020-2030.

a)

b)

Figure 5: a) View overlooking vegetated permanent stream from site and b) Example image of the vegetation around stream.

4.1.1 Connectivity and Ecological Function

Connectivity between areas of vegetation is important to facilitate ecological function. Edge communities are heavily influenced by increased exposure to light, drying winds, and competitive weeds. This 'edge effect' restricts some native flora and fauna to forest interiors. Patch fragmentation increases the edge effect and decreases the availability of habitat for interior species. Loss of ecological connectivity can also impair reproductive function for both flora and fauna.

There were only small areas of vegetation other than pasture. Small amounts of exotic and native vegetation were present within the site, and these were isolated or generally long and narrow, such as the vegetation along the permanent watercourse. As a result, all vegetation within the site was subject to very high edge effects, and as such, the functioning of the vegetated area and its ability to persist and buffer the effects of adverse weather and weed invasion were significantly reduced. The more mature areas were likely to provide some level of connectivity for highly mobile fauna, such as birds, as they move between other small, vegetated areas in the wider vicinity of the site. However, the vegetation present does not present significant connectivity opportunities.

The connectivity and ecological functioning values of the site were considered to be **low**.

4.2 Terrestrial Fauna Habitat

4.2.1 Avifauna (Birds)

No formal bird survey was undertaken on the site. Opportunistic observations, with records retrieved from ebird.org, provided a list of species likely to be present in the wider area (Table 2). The avifauna community is expected to be dominated by common native and exotic species. There is a possibility the At Risk – Declining NZ pipit is present within the site, or wider area. New Zealand pipits can be found in farmland and around wetlands and have been recorded in the rural areas around west Auckland. Specific provisions to manage effects on indigenous avifauna are not required in the PPC because they are already legally protected by the Wildlife Act 1953..

The existing vegetation provides nesting, roosting, and foraging habitat for native birds within the site; however, the value is limited due to the low botanical values of the site. The lack of complex, diverse vegetation significantly limits the ability of the site to provide high-value habitat.

The ecological value of the site for avifauna was considered to be **moderate** due to the potential presence of an At-Risk – Declining species but a lack of quality habitat.

Table 2: Bird species potentially present within the site.

Common name	Species name	Conservation status
Pūkeko	*Porphyrio melanotus melanotus*	Not Threatened
Spur-winged plover	*Vanellus miles novaehollandiae*	Not Threatened
Kingfisher	*Todiramphus sanctus vagans*	Not Threatened
Eastern rosella	*Platycercus eximius*	Introduced and Naturalised
Tui	*Prosthemadera novaeseelandiae novaeseelandiae*	Not Threatened
Magpie	*Gymnorhina tibicen*	Introduced and Naturalised
Fantail	*Rhipidura fuliginosa placabilis*	Not Threatened
Skylark	*Alauda arvensis*	Introduced and Naturalised
Welcome swallow	*Hirundo neoxena neoxena*	Not Threatened
Silvereye	*Zosterops lateralis lateralis*	Not Threatened
Common myna	*Acridotheres tristis*	Introduced and Naturalised
Thrush	*Turdus philomelos*	Introduced and Naturalised
Blackbird	*Turdus merula*	Introduced and Naturalised
Sparrow	*Passer domesticus*	Introduced and Naturalised
Paradise shelduck	*Tadorna variegata*	Introduced and Naturalised
Grey warbler	*Gerygone igata*	Not Threatened
Kereru	*Hemiphaga novaeseelandiae*	Not Threatened
Pheasant	*Phasianus colchicus*	Introduced and Naturalised
Australasian harrier	*Circus approximans*	Not Threatened
NZ pipit	*Anthus novaeseelandiae novaeseelandiae*	At Risk - Declining

4.2.2 Herpetofauna (Lizards)

Herpetofauna (reptiles and amphibians) comprise a significant component of New Zealand's terrestrial fauna. There are currently 104 endemic herpetofauna taxa recognised in New Zealand (Hitchmough et al., 2021) and more than 80% are considered 'Threatened' or 'At Risk'. All indigenous reptiles and amphibians are legally protected under the Wildlife Act 1953, and vegetation and landscape features that provide significant habitat for native herpetofauna are protected by the Resource Management Act 1991 (RMA). Statutory obligations require the management of resident reptile and amphibian populations where they or their habitats are threatened by disturbances such as land development.

No formal lizard survey was undertaken. A review of records from the wider Whenuapai area shows that five species have been recorded in the wider area (Table 3). The habitat present within the site was generally too highly modified to support native lizards, with the exception of copper skink. The stands of mixed vegetation were too open to provide any significant arboreal lizard habitat, and the lack of connection to existing stands of native vegetation means geckos are unlikely to be able to colonise the site even if the habitat is suitable. Copper skinks are known to inhabit areas of long pasture and rank

grass. Ornate skinks are unlikely to be present as they are generally found in forested areas and shrubland, amongst dense leaf litter, low foliage, thick rank grass and under rocks or logs. Habitat such as this was not present on site. Specific provisions to manage effects on indigenous lizards are not required in the PPC because they are already legally protected by the Wildlife Act 1953.

The ecological value of the site for herpetofauna was considered to be **moderate** due to the possible presence of At Risk – Declining copper skink.

Table 3: Lizards present in the wider Whenuapai area.

Common name	Species name	Conservation status	Likelihood of presence
Pacific gecko	*Dactylocnemis pacificus*	Not Threatened	Unlikely
Elegant gecko	*Naultinus elegans*	At Risk - Declining	Unlikely
Forest gecko	*Mokopirirakau granulatus*	At Risk - Declining	Unlikely
Copper skink	*Oligosoma aeneum*	At Risk - Declining	Likely
Ornate skink	*Oligosoma ornatum*	At Risk - Declining	Unlikely

4.2.3 Chiroptera (Bats)

Long-tailed bats (LTBs; *Chalinolobus tuberculatus*) are classified as 'Nationally Vulnerable' in the North Island (O'Donnell et al., 2023). This classification is given the qualifier "Data Poor", which indicates that there is low confidence in the rating due to poor data available on the species populations and distribution (Townsend et al., 2008). LTBs have large home ranges.

No formal survey for LTBs was completed as part of the investigations for this report. However, LTBs are known to occur throughout the Auckland area, including around Whenuapai and west Auckland. Therefore, the site is within the flight range of known LTB habitat.

Few trees on site had suitable roosting or nesting habitat for bats due to the lack of cavities or large sections of flaking bark; the only notable tree was a large dead tree with branches removed, as shown in Figure 5. The site and surrounding area were not considered to be optimal for bats due to the dominance of agriculture with scattered suitable areas of vegetation, and increasing urban areas in the adjacent areas. However, bats are known to utilise waterways as forage and commuting corridors, and the proximity of the site to the Rawawaru Creek and Ratara Stream catchments means there is a possibility of bats foraging in the area. It is therefore considered that LTBs may periodically be present in the area and potentially within the site. However, the habitat is not expected to support regular visits or communal roosts. Specific provisions to manage effects on LTBs are not required in the PPC because they are already legally protected by the Wildlife Act 1953.

The ecological value of the site for bats has conservatively been considered to be **high**.

5 FRESHWATER ECOLOGY

5.1 Watercourses

All waterways within the site were classified and mapped according to definitions within the AUP-OP as either permanent, intermittent, ephemeral, or artificial channels (Figure 3). Watercourses that have been modified for farm drainage but were once natural, upon review of historical aerials, have been mapped as natural streams.

The freshwater assessments were undertaken from December 2023 to January 2024. Despite some areas being outside of the optimal season for classifying watercourses, a conservative approach has been taken for all watercourses, and there was confidence in the classification of intermittent streams due to the areas meeting more than three of the intermittent stream criteria, excluding the presence of surface water more than 48 hours after a rainfall event. Regardless, all watercourses within the site would be required to be reassessed at the resource consent stage prior to future development.

The watercourse classification types are described in this section.

5.1.1 Permanent streams (P1)

One permanent stream was identified within the PPC site, as shown in Figure 3. The permanent stream was classified based on the clear presence of permanent flowing water, stream width and catchment size.

The permanent watercourse is an unnamed tributary of the Rawawaru Creek (P1). It flowed through the eastern part of the site in a northwestern direction to join the Rawawaru Creek.

The stream reach of this unnamed tributary (P1) within the site was well-shaded by the riparian vegetation described in section 4.1 and had a good amount of organic matter input. The stream provided moderate habitat for fauna with a good mix of pools and runs, and the substrate was comprised of a mix of bedrock, soft sediment, and cobble.

a) **b)**

Figure 6: a) Vegetation around the unnamed tributary P1 and b) Organic input and bank stream P1.

A review of the NZFFD for the Waitematā harbour catchment showed eight fish species that have been previously identified in the catchment (Table 4).

The permanent stream reaches of the Waitematā harbour and Rawawaru Creek may provide spawning habitat for īnanga.

Due to the agricultural land uses within the catchments, it is expected that the benthic invertebrate community would be dominated by taxa that are tolerant to high nutrient and sediment loading.

The site is upstream of the Waitematā harbour. There is an SEA located north of the site and downstream at the start of the Rawawaru Creek. All activities occurring upgradient of this have the potential to influence the sensitive receiving environment.

Based on the significance of the location directly upstream of a marine SEA and the likely presence of 'At-Risk' species, the permanent stream was conservatively assessed as being of **moderate** ecological value.

Table 4. Fish species potentially present within the site (records retrieved from the NZFFD, conservation status from Dunn et al., 2018).

Common name	Species name	Conservation status
īnanga	*Galaxias maculatus*	At Risk – Declining
Longfin eel	*Anguilla dieffenbachii*	At Risk – Declining
Shortfin eel	*Anguilla australis*	Not Threatened
Banded kōkopu	*Galaxias fasciatus*	Not Threatened
Redfin bully	*Gobiomorphus huttoni*	Not Threatened
Common bully	*Gobiomorphus cotidianus*	Not Threatened
Mosquitofish	*Gambusia affinis*	Listed Unwanted Organism
Grass carp	*Ctenopharyngodon idella*	Introduced

5.1.2 Intermittent streams (I1 – I2)

Two watercourses within the site have been identified as intermittent streams (Figure 7). These intermittent streams drained to the Rawawaru Creek and the greater Waitematā harbour. The intermittent stream reaches within the site had little riparian vegetation present, and the riparian margin consisted of managed pasture with very limited shading, organic matter input, and filtration functions. The streams are full of mercer grass and banks with soft rush (Figure 7).

Within the intermittent reaches of the site, a number of culverts were present, including at least one that was perched, which likely acts as a partial barrier to fish passage. However, species with climbing ability, such as eels and banded kōkopu, may be able to navigate them.

The intermittent waterways were considered to currently have **low** ecological values. When water is present, they have the potential to support some of the fish species listed in Table 4, including At Risk – Declining fish species, specifically longfin eels. However, observations on site suggest water is not regularly present or present for long periods of time. Therefore, the likelihood of fish other than the tolerant shortfin eel being present is low.

a) b)

Figure 7. Mercer grass, soft rush, shallow channel and lack of shading along a) I1 and b) I2.

5.1.3 Ephemeral streams (E1-E2)

There were two ephemeral streams on site. The ephemeral channels contained rooted terrestrial vegetation within them, showed no evidence of substrate sorting and did not contain natural pools or easily identifiable channels/banks. They contained no significant riparian vegetation and no instream freshwater habitat.

The ecological value of the ephemeral watercourses within the site was considered to be **negligible**.

5.1.4 Artificial channels (A1, A2, A3)

There were three artificial channels on site. These watercourses have been classified as artificial based on a number of criteria, including alignment with the natural topography, absence of a historical natural channel, catchment size and artificial characteristics such as unnaturally deep and straight channels.

Artificial channels also run along some site boundaries as roadside drains (Figure 8). The channel labelled A3 flowed along the northwestern boundary of the site and appeared to be dry. Another roadside drain, A2, which connects to an artificial drain A1 for farm purposes on the southwestern boundary of the site, also appeared dry.

The ecological value of the artificial drains was considered to be **negligible** due to their artificial nature and the channels being dry and considered likely to be dry for the majority of the time.

a) b)

Figure 8: a) Example of artificial channel along the road on the southwestern corner of the site and b) artificial channel that cuts through the corner of the site.

5.2 Wetlands (W1-W4)

Four wetland areas were identified within the site. All of the wetlands were located along the margins of the intermittent stream reaches. Natural inland wetlands within the site have been mapped as per Figure 3. All of the wetlands within the site met the rapid vegetation test for wetland delineation and contained permanent hydrological indicators such as saturated ground and surface water. All wetlands within the site were considered 'natural inland wetlands' as per the NPS-FM definitions. Wetland extent was delineated based on contours and/or a clear change in vegetation community from OBL/FACW dominant to FACU/UPL dominant.

All other pasture areas within the site were considered non-wetlands, using the rapid pasture test (i.e., >50% dominance of pasture species) (MfE, 2022b). Regardless, it is acknowledged that wetlands can be dynamic features that fluctuate regularly/seasonally, and wetlands within the sites would be required to be classified and reassessed at the resource consent stage prior to future development.

The wetlands were vegetated with soft rush (*Juncus effusus* – FACW), water pepper (*Persicaria hydropiper* – FACW), lotus (*Lotus pedunculatus* – FAC), mercer grass (*Paspalum distichum* – FACW), kiokio (*Parablechnum novae-zelandiae* – FAC), redshank (*Persicaria maculosa* – FACW), creeping buttercup (*Ranunculus repens* – FAC) and Yorkshire fog (*Holcus lanatus* – FAC) (Figure 7). *Paspalum* (*dilatatum* and *urveilli*; both FAC) was observed on edges of wetland and other pasture species like kikuyu and clover were noted past the wetland boundary.

The stream margin wetlands met the definition of a natural inland wetland as per the NPS-FM.

The ecological value of these stream-margin wetlands was assessed as **low**. The vegetation community around the wetlands was dominated by exotic/invasive species.

5.3 Summary of Ecological Values

The values of the site are summarised in Table 5. The terrestrial ecological value of the site was generally low. Exotic trees (i.e., planted stands and shelterbelts) within the site were considered to provide **low** ecological values. Very little native vegetation remains across the site to provide any significant habitat for indigenous fauna, aside from some small regenerating patches consisting of common species. Rank grasses around the site possibly provide some suitable habitat for 'At-Risk' indigenous herpetofauna. The remainder of the site itself is largely comprised of low-value managed pasture. Features on site were considered to provide **moderate** ecological for birds and lizards and was conservatively assessed to have **high** ecological value for bats.

The freshwater values of the site are linked to the presence of moderate-value permanent watercourses, which may provide habitat for 'At-Risk' īnanga spawning. Low-value freshwater features included intermittent streams and stream margin wetlands that have been degraded due to the agricultural practices.

Table 5: Summary of the ground-truthed terrestrial and freshwater ecological values within the site

Ecological Feature	Ecological Value
Vegetation	Low
Connectivity and Ecological Function	Low
Avifauna (Birds)	Moderate
Herpetofauna (Lizards)	Moderate
Chiroptera (Bats)	High
Permanent streams	Moderate
Intermittent streams	Low
Ephemeral streams	Negligible
Artificial channels	Negligible
Stream margin wetlands	Low

6 ASSESSMENT OF ECOLOGICAL EFFECTS

6.1 Overview

The proposed PPC seeks to rezone approximately 16.4 ha of land from FUZ to a MHU zone under the AUP-OP. Additional provisions are proposed for the area as part of the proposed precinct. All Auckland-wide and MHU zone provisions within the AUP-OP will apply to the re-zoned land and will enable the Auckland Council to regulate and manage future development.

This section assesses the potential effects of the proposed urbanisation of the site on the current and potential ecological values within the site and the associated wider landscape.

6.2 Terrestrial Ecology

6.2.1 Vegetation and terrestrial ecological connectivity and function

Vegetation values within the site were significantly limited due to the dominance of exotic vegetation. No SEAs were present within the site. The most significant amount of vegetation within the site was located within the riparian yard of the permanent stream. Any alteration to the riparian vegetation will require resource consent, and therefore, effects will be assessed during future consenting phases if alteration is proposed.

Rezoning the site will result in low adverse effects on the existing vegetation. It is expected vegetation beyond the riparian yard will be removed, however, this can already be removed as a permitted activity. It is noted that as a part of future development works, landscaping and riparian planting will be required under the proposed precinct provisions and undertaken throughout the site, which will provide an increase in plant diversity and ecological connectivity. The precinct plan also identifies a green link and future neighbourhood park plus a 20 m local road with 2 m berm which provides space for tree planting. Landscaped areas will also be required to be provided within future residential development as required by the MHU zone provisions.

Future street trees, planting and landscaping will assist in achieving the vision of the North West Wildlink, in creating a safe, connected and healthy habitat for native wildlife across Auckland.

6.2.2 Terrestrial indigenous fauna

The protection and enhancement of the ecological features within the site and the creation of areas of new habitat through revegetation planting in relation to open space areas and riparian margins will increase and improve the quality of the terrestrial habitat for indigenous fauna across the site over time.

Any potential direct adverse effects on native terrestrial fauna as a result of future development works (e.g., earthworks, vegetation clearance) will be assessed at the resource consenting phase. It is considered that adverse ecological effects on fauna can be appropriately mitigated through the implementation of fauna management plans, if considered appropriate.

Specific provisions to manage the effects on LTBs are not required in the PPC because they are already legally protected by the Wildlife Act 1953.

6.2.3 Pest mammals

The rezoning of the site from semi-rural to urban land uses will ultimately lead to an increase in the human population density within the area. An increase in human population density has been found to decrease possum and rodent numbers and, expectedly, increase domestic cats in residential areas

(Miller, 2020). With the close proximity of the existing Whenuapai development, roaming domestic cats are likely already present within the site. However, increased numbers are inevitable as a result of the rezoning.

In turn, the number of mustelids can become very limited, where cats are in abundance. Hedgehogs are often abundant in urban areas due to the abundance of anthropogenic food and shelter (Miller, 2020).

The current site is not known to have pest control measures, and most pests are likely at carrying capacity. Pest control is likely to be implemented on-site once the number of residents increases. Additionally, it is likely that future development enabled by the PPC will propose native vegetation protection and enhancement that incorporates pest control, which will aim to decrease possum, mustelid, hedgehog, and rodent densities within the proposed ecological spaces.

The proposed change in land use will likely result in an overall decrease in the possum, mustelid, and rodent abundance and an overall increase in hedgehog and cat numbers in urban areas. Overall, urbanisation of the PPC areas is expected to provide positive outcomes for reducing pest mammal populations within the site and the wider area.

6.3 Freshwater Ecology

6.3.1 Watercourses

The permanent watercourse within the site was considered to be of moderate ecological value, while the intermittent watercourses were considered to be of low ecological value. The watercourses are already subject to existing Auckland-wide AUP-OP rules and policies.

The main threats to freshwater ecology as a result of a change to MHU zone are:

- The decrease in riparian yard setback
- The potential for increased impervious surfaces as a result of development.
- The potential increase in contaminant runoff as a result of development

All threats can be effectively managed during future development with appropriate controls such as erosion and sediment control plans, appropriate design and riparian planting and management. It is expected that any specific potential adverse effects resulting from future development will be addressed and managed during future consenting processes, including through detailed design (e.g. for culverts and outfalls) and through mitigation such as planting.

Activities in relation to development near intermittent and permanent streams (e.g., riparian yard infringements, riparian vegetation clearance, stream reclamation) will require assessment at the resource consent stage. It is considered that the effects management hierarchy will be appropriate for managing the adverse effects of future proposals and mitigating/offsetting where required. As such, the proposed rezoning is not anticipated to result in residual adverse effects on the site's freshwater values.

It is expected the artificial drains will be reclaimed during future works or incorporated into on-site stormwater management. Artificial channels are not subject to protection or management rules under either the FUZ or MHU zone, and therefore, no change in effects is anticipated.

Urban activities are often associated with elevated road-derived contaminants such as heavy metals and hydrocarbons caused by the increased traffic due to a significantly denser population. Contaminants can have detrimental effects on aquatic flora and fauna. Additionally, there are often issues of increased

litter and nutrients (from garden fertiliser) entering the watercourses of urban land use areas. Changing from semi-rural land uses is also likely to result in a decrease in certain contaminants, such as those associated with stock effluent runoff.

Activities in relation to development near intermittent and permanent streams (e.g., riparian yard infringements, riparian vegetation clearance, stream reclamation) will require assessment at the resource consent stage. It is considered that the effects management hierarchy will be appropriate for managing the adverse effects of future proposals and mitigating/offsetting where required. As such, the proposed rezoning is not anticipated to result in residual adverse effects on the site's freshwater values. Significant enhancement of freshwater ecological values within the PPC sites are expected through the removal of existing culverts farm crossings, planting of riparian yards, the reduction of stock effluent and fertiliser run-off to waterways, and in conjunction with appropriate stormwater management practices to improve water quality to receiving environments.

6.3.2 Riparian margins

The proposed change from FUZ to MHU zone will decrease the riparian yards setback from 20 m to 10 m. However, as the site is zoned Future Urban, it is already anticipated that this reduction will occur at some stage.

One of the main purposes of riparian yard setbacks is to provide a buffer to the stream to increase ecological values through filtration of overland flow, provision of shade and organic matter, and contribution to fish and invertebrate habitat. Currently, the riparian yards are of limited ecological value and comprise narrow strips of vegetation and pasture. Subdivision and development of areas adjacent to waterways will include planting of the full 10 m riparian yard which will be a significant improvement from what is currently present. There is limited proven scientific evidence as to what width of the riparian yard is most effective, with the general consensus being any yard is better than none, and wider yards tend to be more self-sustaining and require less intervention to manage weeds. While greater setback distances allow more space for riparian planting and, therefore, a corresponding increase in the ecological benefit derived from such planting, 10 m is consistent with the zoning provision and a 10 m riparian yard is considered to be appropriate.

The rezoning is expected to result in an increase in the riparian vegetation quality of the plan change area overall and is provided for as part of the proposed precinct provisions.

6.3.3 Wetlands

There are four wetlands within the site boundaries. The location of all wetlands is shown in Figure 3. There is the potential for wetlands to be affected by future land use changes in the same manner as waterways. Wetlands are also protected from development by the AUP-OP (Chapter E3) and the NES-F, and any future earthworks, diversions, and discharges within 100 m of any wetland or works, discharges or vegetation removal within or within 10 m of a wetland will be subject to a resource consent application. Identification of the wetlands at this stage allows future development to be designed around the wetlands and their catchments to ensure no complete or partial drainage occurs.

It should be noted that as the zoning is currently FUZ, it is a prohibited activity to reclaim natural inland wetlands under the NES-F. The urban rezoning will provide a consenting pathway for wetland reclamation under Regulation 45C of the NES-F. Compliance with relevant NES-F regulations in relation to natural inland wetlands will be required for subsequent development following rezoning, and it is

considered that any adverse effects on natural inland wetlands will be able to be assessed and managed appropriately at the future resource consent stage.

6.3.4 Stormwater

If not appropriately managed, a land use change from semi-rural to urban land use may threaten freshwater ecological values through the potential increase in impervious surfaces and pollutant runoff due to subsequent development. Increases in impervious surfaces can amplify the adverse stormwater effects on the receiving environment by resulting in scouring, erosion or high levels of contaminant input if not designed and mitigated appropriately. However, changing from a semi-rural land use is likely to result in a decrease in certain contaminants such as those associated with fertilisers and pesticides and sediment runoff.

A site-specific stormwater management plan has been prepared by The Neil Group (2024). The stormwater management principles proposed for this PPC will provide for effective control of the increased runoff arising from the change in impervious areas. This will include on-site retention providing for the re-use of rainwater, along with detention to limit downstream stream erosion.

As a part of any future resource consents, two stormwater dry basins are proposed to be constructed to provide the detention and attenuation of larger flood flows. The stormwater basins have been designed to be dry to discourage bird roosting, in line with RNZAF requirements. The stormwater basins, as well as raingardens, will also treat runoff from high contaminant generation activities where required. The stormwater basins will also provide ecological value with extensive plantings.

The required riparian planting along streams and around wetlands will also provide filtration services to assist with the reduction of contaminants and sediment entering waterways.

6.4 Relevant Plans and Policies

6.4.1 National Policy Statement for Indigenous Biodiversity 2023

The National Policy Statement for Indigenous Biodiversity (NPS-IB) sets out objectives, policies and implementation requirements to manage natural and physical resources to maintain indigenous biodiversity under the RMA. It outlines a system for the management of biodiversity outside of public conservation land.

There is no significant indigenous biodiversity within the site and no areas that meet the definition of a Significant Natural Area as per the NPS-IB. The effects management hierarchy will be applied to manage residual ecological effects. The PPC will provide opportunities to increase indigenous cover through planting and enhancements of riparian areas and wetlands.

A 10-metre riparian margin will be provided around all permanent and intermittent waterways as well as the wetlands. And that this margin will be planted with appropriate native species. It is considered that the plan change is in accordance with the NPS–IB.

6.4.2 National Policy Statement for Freshwater Management 2020

The NPS-FM provides national direction for decisions regarding water quality and quantity and the integrated management of land, freshwater and coastal environments under the RMA. The NPS-FM contains national objectives for protecting ecosystems, indigenous species and the values of outstanding water bodies and wetlands.

All streams and wetlands will remain and be enhanced through the provision of a 10-metre planted riparian buffer around all features.

Future resource consents required for the development of the site will require compliance with relevant NES-F regulations in relation to natural inland wetlands, noting that a consenting pathway is provided for urban development (refer to Regulation 45C).

6.4.3 Auckland Unitary Plan – Operative in Part 2016

The AUP-OP sets out a number of policies and objectives that give effect to the RMA to promote the sustainable management of natural and physical resources. This section addresses the objectives and policies set out in the AUP-OP pertaining to ecology.

Chapter B7 – Natural Resources

In line with the objectives and policies in this chapter, areas of significant indigenous biodiversity value and freshwater environments have been identified. Freshwater habitat will be protected from inappropriate adverse effects of subdivision use and development, or otherwise, the effects management hierarchy applied to manage ecological effects. A 10 metre planted riparian margin will be provided around all natural freshwater environments which will provide significant benefit to both terrestrial ecological values and stream and wetland functioning.

Chapter E1 – Water Quality and Integrated Management

Consistent with Chapter E1, the development of the site will provide opportunities for the appropriate integrated management of water discharges, subdivision and greenfield development to maintain and/or enhance water quality, flows, intermittent/permanent streams and associated riparian margins.

A stormwater management plan has been prepared by Neil Construction Limited. The plan details methods to be put in place to manage both the quality and quantity of stormwater generated within the site.

Chapter E3 – Lakes, Rivers, Streams and Wetlands

All potential streams, rivers and wetlands have been identified within the sites in line with Chapter E3. Additionally, significant adverse effects can be avoided by retaining all intermittent and permanent streams where practicable and where avoidance cannot be achieved through the implementation of the effects management hierarchy.

Chapter E15 – Vegetation Management and Biodiversity

Consistent with Chapter E15, the vegetation and biodiversity values of the site have been identified. Development of the site will provide opportunities to maintain and enhance ecosystem services and indigenous biodiversity values, particularly in sensitive environments and areas of contiguous indigenous vegetation cover while providing for appropriate subdivision, use and development.

4.3.3 Auckland Plan 2050

The Auckland Plan is a long-term spatial plan that aims to ensure Auckland grows in a sustainable way that supports people and the local environment and ecosystems. When considering environmental outcomes, the plan seeks to preserve, protect, and care for the natural environment and use development as an opportunity to do so, as well as future-proof Auckland's infrastructure.

The precinct plan aligns with the outcomes sought under Auckland Plan through the incorporation of ecological and active mode/green corridors into the design to connect Aucklanders to their environment. It will also incorporate sustainable infrastructure while providing for an appropriate level of development.

Consistent with the Auckland Plan 2050, the PPC provides an opportunity to restore degraded ecosystems where appropriate while providing for appropriate development.

6.4.4 Parks and Open Spaces Strategic Action Plan 2013

Auckland Council's Parks and Open Spaces Strategic Action Plan 2013 seeks to conserve Auckland's rich natural heritage through parks and open spaces. The Plan further states that parks and open spaces can protect ecosystems that make Auckland unique, such as our streams.

Consistent with the Parks and Open Spaces Strategic Action Plan, the PPC provides an opportunity to create an open space that protects the streams and site.

4.3.4 Auckland's Urban Ngahere (Forest) Strategy 2018

Auckland's Urban Ngahere (Forest) Strategy aims to promote the protection, expansion, management, and education around the network of vegetation within current and future urban Auckland. The includes remaining forest fragments, native trees, natural stormwater assets, community gardens and parks, and private gardens.

The vegetation within the PPC sites has been identified and classified, and the development of the site provides opportunities that align with the strategy's nine principles: Right tree in the right place; Preference for native species; Ensure urban forest diversity; Protect nature, healthy trees; Create ecological corridors and connections; Access for all residents; Management urban forest on public and private land; and deploy regulatory and non-regulatory tools.

The Precinct Plan proposes increased canopy cover through stream and wetland riparian revegetation, improved ecological linkages and corridors, a dominance of indigenous planting in landscaped areas, incorporation of plants for ecological revegetation areas that suit the ecological district and environmental conditions.

7 SUMMARY AND RECOMMENDATIONS

Neil Construction Limited are applying to Auckland Council for a PPC to rezone the land at 98 and 100-102 Totara Road, Whenuapai, from FUZ to MHU zone under the AUP OP.

The existing terrestrial and freshwater ecological values of the site have been identified and assessed. It is considered the PPC is appropriate for the area from an ecological perspective and can protect and enhance the indigenous biodiversity values of the site in accordance with the outcomes of relevant plans and policy documents while providing for efficient development.

Overall, it is considered that the proposed PPC can effectively manage any adverse effects of residential development on the natural environment through the existing planning provisions and policy framework within the AUP-OP. Any potential adverse effects can be adequately mitigated through appropriate stormwater design, fauna management plans, restoration and riparian planting, and detailed design.

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Appendix A
Clause 23 Response

TO:	Auckland Council	Date:	3 July 2024
COPY TO:	Michelle Kemp (Campbell Brown)	Document No:	10096-003-1
FROM:	Annabelle Coates		

WHENUAPAI GREEN PPC – RFI RESPONSE, ECOLOGY

Neil Construction Limited (NCL) is applying to Auckland Council for a Private Plan Change (PPC) to rezone the land at 98, 100 and 102 Totara Road, Whenuapai ('the site'). The PPC seeks to rezone approximately 16.4 ha of land from a Future Urban Zone (FUZ) to Residential - Mixed Housing Urban (MHU) zone.

Auckland Council, through a consultant ecologist (Wildlands Consultants Limited) have requested further information to assess the potential ecological effects of the proposed plan change. The contents of this memo are intended to respond to the requests where necessary.

1. Please clarify whether any areas of the site meet the RMA definition of 'wetland', but have not been identified and mapped as natural inland wetland due to the use of the pasture exclusion.

No. The only wetlands present on the site were those that were identified in Figure 3, and section 5.2 of the ecological impact assessment.

We understand that our methodology or reasoning for non-wetlands areas may not have been clear in the EcIA. As such, to clarify, wetlands and non-wetlands in pastoral settings typically consist of relatively simple plant communities and exist along a hydrological continuum. At one end of continuum are sites that are clearly wetlands, with the plant community dominated by OBL or FACW species. At the other end are areas that are clearly dryland, with the plant community dominated by FACU or UPL species.

In the field, rapid tests are often utilised when assessing these relatively simple plant communities, where a qualitative visual assessment of dominant species is generally adequate and more efficient than intensive transect/plot sampling.

The rapid assessment methodology in the MfE wetland delineation protocols focus on if an area is a wetland, rather than if an area is not a wetland. We believe this is an oversight of the wetland delineation protocols. However, in contrast the MfE pasture exclusion assessment methodology does set out a rapid assessment methodology for areas that are very clearly drylands.

In the case of the PPC site, outside of the identified wetlands, the pasture plant community consisted of simple, nearly uniform stands of FACU and UPL species. These areas had low species diversity, low spatial heterogeneity, and abrupt boundaries between different vegetation communities. As such, we have used the rapid assessment methodology outlined in the pasture exclusion protocols as a proxy in the absence of dryland rapid test within the wetland delineation protocols.

Additionally, no hydrological indicators were present within the site, other than within the wetlands already identified.

Regardless of this, as this application concerns a plan change only, any future resource consents would require the site to be reassessed for wetland presence. As wetlands are dynamic features that fluctuate regularly/seasonally, the wetlands that were present during the site assessment for the plan change,

may be larger/smaller/different shape/not present, in the future. Up to date information will be collected at the time of future development in order to accurately determine effects of that development, and provide appropriate mitigation and management if necessary.

2. Please justify the inclusion of a road (indicative) extending eastward from the site into the neighbouring NZDF land.

The location of a road has wider considerations than just ecological values. I cannot provide justification for the siting on the road. However, I make the following comments as they relate to ecological values.

Crossing a stream is not considered to be reclamation and as such there will be no loss of extent. The stream will still be present, and will still function as a natural stream, providing the crossing is appropriately designed. There is no reference to reclamation in the NPS-FM. In the NES-F, the rules which stem from the NPS-FM, culverts are permitted activities, provided they can meet the conditions set out in clause 70(2). If the stream crossing does go ahead, noting detailed design will not be completed until any plan change processes have been completed, an appropriate crossing will be installed. If the crossing is a culvert, and cannot meet the permitted activity conditions, resource consent will be applied for with any mitigation or management recommended as appropriate.

The intent of a plan change is show that the change is achievable and that there would be not significant constraints/adverse effects, and that the plan change is in line with national and regional policies. If stream crossings were considered reclamation, requiring functional need to be considered, stream crossings would almost be unachievable/impossible for urban development unless it was for specified infrastructure that would will provide significant national or regional benefits.

In regard to standard I1.6.5 of the proposed precinct provisions, it is recommended the wording of the precinct plan be updated to state "*At the time of subdivision or development, land within 10m of the streams and wetlands identified on Precinct Plan 1 must be planted with native vegetation from the top of the bank of the stream or the wetland's edge, with the exception of any locations where road or pedestrian crossings are proposed.*" This would allow for appropriate urban development to occur allowing pedestrian and road access across the streams.

I also cannot comment on the appropriateness of locating a neighbourhood park in this location as that should be determined by an appropriately qualified urban designer or similar. I do note though that the statement in the EcIA "*Consistent with the Parks and Open Spaces Strategic Action Plan, the PPC provides an opportunity to create an open space that protects the streams and site*," is correct. Providing stream crossings and protecting streams within the site are not mutually exclusive, providing the crossing is appropriately desgined. As mentioned, detailed designs are not required and plan change stage, rather it must be demonstrated the the proposed plan change will not create significant adverse effects, and is consistent with relevant policies. From an ecological perspective, the plan change meets these requirements.

3. Please clarify if wetland reclamations are intended to occur as a result of the rezoning and associated development.

No wetland reclamation is anticipated as a result of proposed future works within the site. Nevertheless, the purpose of a plan change application is not to determine detailed design or the

specific effects of the detailed design , rather the purpose is to assess the potential effects associated with the plan change and whether the plan change is consistent with relevant policies. The EcIA is factually correct. Changing the zoning from rural (Future Urban Zone) to any urban zone does provide a consenting pathway for wetland reclamation. This change needs to be considered when considering potential effects of the change in zoning. However, just because there will be a consenting pathway does not automatically mean wetlands can and will be reclaimed. Consenting pathways are not permitted activities. Any future works to reclaim a wetland, noting that no such works are anticipated, would still require full assessment and application of the effects management hierarchy, with appropriate mitigation provided at the time. It is irrelevant to state the site provides limited opportunities for on site offsetting or compensation as the effects of such future works have not been established, and therefore the ability of the site to provide the appropriate offsetting or compensation cannot be assessed. Additionally, offsite mitigation may be appropriate, if such works are required, but again, this will be determined once the effects management hierarchy has been applied to any real, or imagined future works. Lastly, if appropriate mitigation for any theoretical wetland reclamation cannot be achieved, then the resource application for those specific works should be rejected.

4. Please justify the reduction of the riparian yard from 20 metres to 10 metres.

The change from a rural zone (Future Urban Zone) to an urban zone allows the riparian yard to be decreased from 20 m to 10 m. The land has already been rezoned from a rural zone, to Future Urban Zone, which implies it has been considered suitable for urban development. Auckland Council's own guidance, as provided in TP148 states a 10 m wide buffer "*allow[s] for indigenous vegetation succession and should result in a relatively low-maintenance riparian zone. Edge effects mean that the outer 1-2 metres of the buffer is likely to suffer weed infestations, and these weeds would spread to the interior of the riparian zone wherever canopy gaps occurred.*" The guidance further states that buffers of 15 to 20 m should be required on 'large waterways' though it does not define what a large waterway is. For these purposes, we consider a large waterway would be more than 3 m in width, and therefore subject to esplanade provisions, thus requiring a minimum of 20 m from the stream to remain undeveloped. We also note the streams within the site have very small catchments, and flow into the sea approximately 500 m downstream of the site, further supporting their consideration as not 'large waterways.' The intermittent streams within the site were much smaller than 3 m in width. The permanent stream that flows for a very short distance (approx. 15 m) through a corner of the site was also much smaller than 3 m in width (approx. 1.5m).

Based on the size of the streams, and councils own guidance, we consider a 10 m riparian yard is perfectly adequate to enhance and protect riparian and stream functions.

5. Please;

a) clarify the "riparian corridor" areas on the proposed precinct plan.

b) Provide a plan identifying indicative riparian planting areas.

The Precinct Plan does not clearly show where riparian corridors will be located. For clarity, the 'green link' indicated in the plan is also a riparian corridor. An updated plan will be provided.

6. Please clarify the intended size and location of the neighbourhood park.

Size and location of any proposed parks or recreation grounds are beyond the expertise of an ecologist. They should be assessed by an appropriately qualified urban designer or similar expert. Any riparian planting associated with the streams and wetlands would occur regardless of the location or size of the park.

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