



**ECOLOGICAL ASSESSMENT PERTAINING TO A PROPOSED  
PRIVATE PLAN CHANGE**

---

**at**

**159 Awakino Road, Dargaville**



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**June 2022**

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# 1.0 INTRODUCTION

## 1.1 Background & Proposed Private Plan Change

Moonlight Heights Limited ('the Client') proposes to conduct a Private Plan Change (PPC) ('the Proposal') at 159 Awakino Road, Dargaville ('the subject site') to enable the creation of Awakino Precinct. Awakino Precinct would enable medium density residential development for a range of allotment sizes where ecological enhancement, open space and connectivity corridors are achieved.

Rural Design 1984 Limited (RDL) has been engaged by the Client to undertake an ecological assessment to identify and assess existing ecological values of the site, and outline ecological opportunities, constraints and potential mitigation strategies associated with the Proposal.

The subject site is situated approximately 2 km west of Dargaville town centre (Figure 1). The subject site is accessed from Awakino Road, Dargaville and is currently zoned as 'Rural' under Kaipara District Plan (Operative) (Figure 2). It covers 14 properties as presented in Figure 3 collectively extending over an area of approximately 39.26 ha. The site abounds several sites zoned as a mixture of rural and residential. The subject site contains dwellings, sheds and ancillary farm buildings and infrastructure (fences and troughs etc).

Reviewing a concept drawing provided by Barker & Associates, it is understood that following the PPC the subject site is intended to be subdivided into residential lots with an approximate total lot yield ranging from 348 - 465 (depending on overall lot minimum sizes).



Figure 1: Showing the subject site in relation to Dargaville

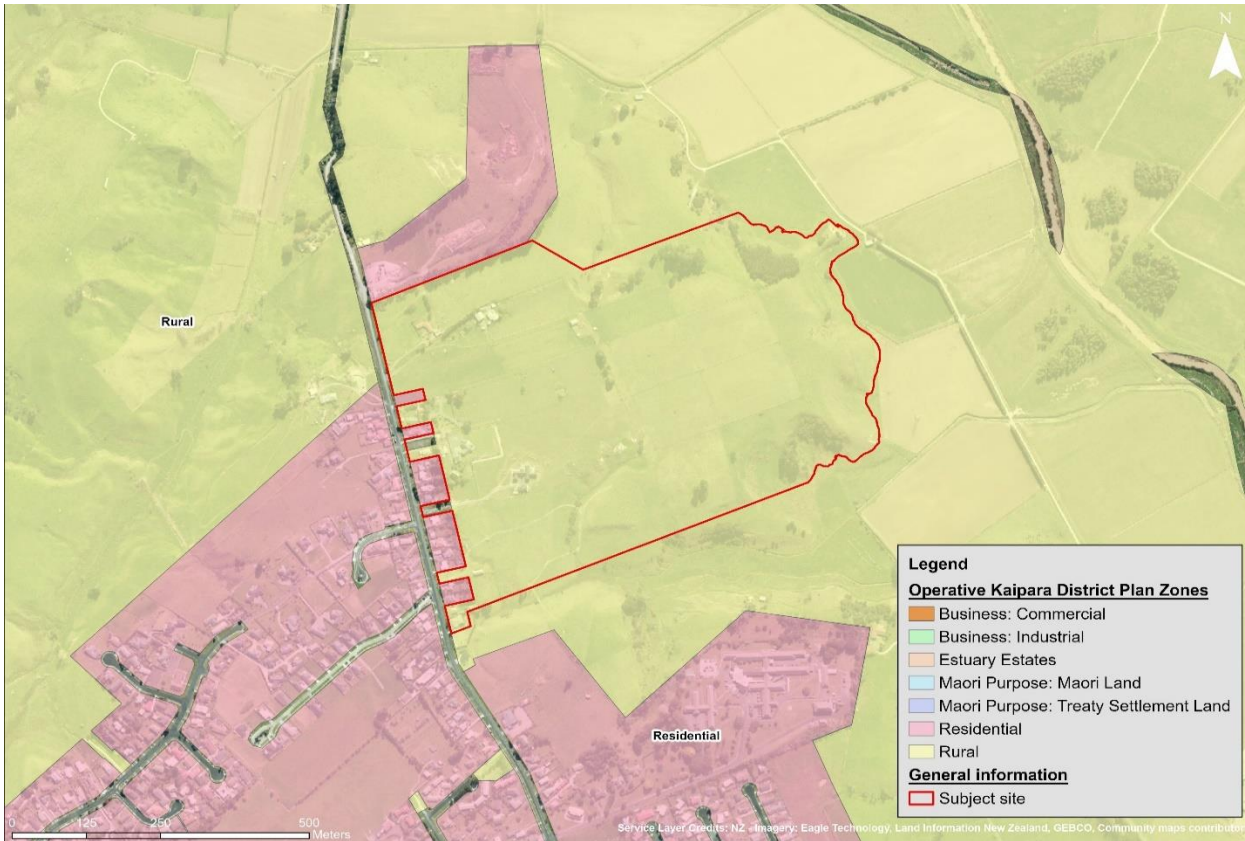


Figure 2: Showing the current KDC Plan zoning on the subject site and surrounds



Figure 3: Showing the plan change area and associated existing parcel boundaries

## **2.0 METHODOLOGY**

### **2.1 Site survey methodology**

The site and surrounding areas were visited on the 18<sup>th</sup> of March 2022 and a general walk over was conducted over the boundaries of the site, with terrestrial and aquatic features identified. The natural features were surveyed and recorded by Rural Design using a GPS unit (Trimble TDC600).

Field surveys were undertaken over part of the subject site. Natural land patterns were observed, and an assessment was conducted, including detailed botanical, avifauna and freshwater surveys with the results found within this report. No quantitative field survey of herpetofauna was conducted, however data from DoC Herpetofauna database and the Kaipara ED PNAP report were reviewed as a part of the assessment.

Both terrestrial and aquatic ecological values were then assessed in order to evaluate the potential, actual, direct or indirect impacts associated with the proposed development. In conjunction with site assessments, a desktop review was undertaken to ascertain information relating to the site's ecological characteristics.

Existing information reviewed included:

- DOC Bio-web Herpetofauna database;
- DOC Bat database;
- iNaturalist New Zealand; and
- New Zealand Freshwater Fish Database.

Watercourses on site were classified in accordance with criteria outlined in the Proposed Regional Plan for Northland (Updated Appeals Version – March 2022). There was 0.5 mm of rainfall within the 48 hours prior to the 18<sup>th</sup> of March 2022 survey (NRC Environmental Data Hub).

### **2.2 Assessment of Effects Methodology**

#### **2.2.1 EIANZ Assessment**

As a part of our ecological assessment, we briefly assessed the potential effects of the proposed PPC and subsequent site development on both terrestrial and aquatic values on site. We generally followed the process as described within Ecological Impact Assessment (EclA) guidelines (EIANZ 2018). The guidelines provide a process for identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components; and providing a scientifically defensible approach to ecosystem management.

#### **2.2.2 Values Assessment**

Four matters were used to determine the ecological value of the ecological features present on-site, these being 'Representativeness, Rarity/distinctiveness, Diversity and Pattern, and Ecological Context' as prescribed under the EIANZ (2018) criteria. The method involves assigning ecological values under each of these four matters, an explanation on each matter and a series of attributes as outlined within Table 4 of the EIANZ guidelines (2018). A scoring system provided in Table 6 of the EIANZ guidelines requires the combination of these assessment values to provide an overall assignment of ecological value to each feature.

#### **2.2.3 Magnitude of Effects Assessment**

An assessment of the potential magnitude of effects was evaluated in general accordance with Roper-Lindsay et al. 2018) with the consideration of potential effects associated with potential development proposal on identified ecological values on site. The method involves assessing the magnitude of effects based on criteria outlined in Table 1 and the overall level of effect using the matrix in Table 2. This assessment framework allows for effects to be ranked on a scale from 'Net gain' to 'Very High' and provided justification for avoidance, mitigation and offsetting requirements as appropriate.

Table 1: Criteria for describing magnitude of effect (Roper-Lindsay et al. 2018)

Magnitude	Description
<b>Very high</b>	Total loss or very major alteration to key elements/ features of the baseline conditions such that the post development character/ composition/ attributes will be fundamentally changed and may be lost from the site altogether; AND/OR Loss of a very high proportion of the known population or range of the element/feature.
<b>High</b>	Major loss or major alteration to key elements/ features of the baseline (pre-development) conditions such that post development character/ composition/ attributes will be fundamentally changed; AND/OR Loss of a high proportion of the known population or range of the element/feature.
<b>Moderate</b>	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of baseline will be partially changed; AND/OR Loss of a moderate proportion of the known population or range of the element/feature.
<b>Low</b>	Minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible but underlying character/composition/attributes of baseline condition will be similar to pre-development circumstances/patterns; AND/OR Having a minor effect on the known population or range of the element/feature.
<b>Negligible</b>	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation; AND/OR Having negligible effect on the known population or range of the element/feature.

Table 2: Criteria for describing level of effects (Roper-Lindsay et al. 2018)

Magnitude	Level of effects				
	Very high	High	Moderate	Low	Negligible
<b>Very high</b>	Very high	Very high	High	Moderate	Low
<b>High</b>	Very high	Very high	Moderate	Low	Very low
<b>Moderate</b>	High	High	Moderate	Low	Very low
<b>Low</b>	Moderate	Low	Low	Very low	Very low
<b>Negligible</b>	Low	Very low	Very low	Very low	Very low
<b>Positive</b>	Net gain	Net gain	Net gain	Net gain	Net gain

### 3.0 ECOLOGICAL CONTEXT

#### 3.1 Kaipara Ecological District

The subject site is situated within the Kaipara Ecological District (Northland Conservancy), which is abounded by the Tutamoe Ecological District to the north, Tangihua Ecological District to the northeast, Tokatoka

Ecological District to the east and Otamatea Ecological District to the southeast. The Kaipara ED (Northland) covers 87,700 hectares of land.

Kaipara ED (Northland) contains significant and extensive duneland and wetland ecosystems and borders most of the length of the Kaipara Harbour and the Northern Wairoa River. Whilst the dunelands and wetlands remain largely unmodified, other remaining indigenous ecosystems within the Kaipara ED (Northland) are mostly secondary and fragmented. As per Smale *et al.* (2009), Kaipara ED (Northland) contains a total of 113 natural areas covering 23,652 ha including fresh and estuarine waters of Kaipara Harbour. 62 natural areas are of high ecological significance and across the Ecological District, 13% of land area remains covered by indigenous vegetation.

Transitional ecotone sequences have been severely compromised in the Kaipara Ecological District (Northland). Drainage of wetlands and clearance of indigenous habitat types for the use of pastoral grazing and agricultural intensification have severely compromised the distribution of larger transitional ecotone sequences in the Kaipara Harbour catchment. Pest plant and animal establishment has further exacerbated this process. Uncontrolled livestock access to sensitive areas of native vegetation such as existing bush, riparian and wetland features is a major threat to native biodiversity and ecosystem functioning, therefore any restoration attempts that include exclusion of stock from these areas in perpetuity should be supported.

Nationally, wetlands have been severely reduced in extent, with approximately 10% of their original area remaining (Johnson & Gerbeaux 2004). Of the natural areas identified in the Kaipara ED (Northland), only 4% is freshwater wetland and 4% is estuarine wetland. Therefore, remaining wetland features are a priority for protection both regionally and locally. The wetland areas throughout the Kaipara ED (Northland) provide critical habitat for a range of indigenous water birds including migratory waders, herons, grebes, waterfowl, gulls, terns and, shags while reedlands around the wetland margins is important habitat for species such as spotless crane, North Island fernbird and banded rail (Smale *et al.* 2009).

Considering the above circumstances, any land development proposal that works with the existing natural features present within the development footprint and aims to strengthen and protect habitats of ecological significance should be supported. The development proposal for the subject site presents an opportunity to re-introduce appropriate plant species that were once common in specific ecotypes, retire sensitive habitats from grazing pressures, and manage and eradicate problematic weeds and pest animal species.

## **3.2 Site background and ecological overview**

The subject site is located on the urban fringe boundary of Dargaville, near the Dargaville Hospital. The subject site is predominantly in pasture and depauperate of indigenous vegetation save one small, remnant patch of kanuka in the centre of the site, and a sliver of towai treeland on the south-eastern border. The site has an extensive network of artificial watercourses which drain the property into the contiguous Awakino River system to the east. Given the wet nature of the site, there are several indicative wet seep and wetland areas both within and nearby. Presently, there are several Reserve Management Units (RMUs) and a single PNA within 1 km of the site.

### **3.2.1 Changes in Land Use**

Originally the entirety of the site would have been a continuation of a significant ecotone sequence of forest (with vegetation cover similar to the surrounding PNAs) merging with the saline influence of the nearby Wairoa River. It is likely that this site would have experienced seasonal flooding events given the underlying geology and its proximity to the Awakino and Wairoa Rivers. Anthropomorphic land use such as forestry, urbanization



and agriculture have highly modified the native vegetation and hydrological patterns in the area through the removal of trees, channelized drainage, dams, intensive earthworks and introduction of exotic forestry.

By analysing historic aerial imagery from Retrolens, in the earliest available historic aerial imagery file from 1957 (Figure 4) it appears that the subject site and surrounds were dominated by pasture and horticultural activities along the site's western aspect, and scattered regenerating forest remnants along the eastern aspect. Of note, is a historical airstrip that can be seen in the central aspect of the site. By 1966, further land clearance is evident throughout the site and wider area, which is accompanied by the addition of roadways. Specifically, the eastern and central aspects of the site have been further cleared of native vegetation (Figure 5). This trend continues into 1979 where further land clearance and roadway development can be seen (Figure 6). At this time, most shelterbelts on site have been removed. In 2017, the most striking difference to the wider area can be attributed to the acceleration of urban development, particularly to the south of site (Figure 7). Further clearance of native vegetation is notable on site, and at this point in time the historical airstrip has been removed and converted into pasture.



Figure 4: Showing the subject site and surrounds in 1957 (Source: Retrolens)

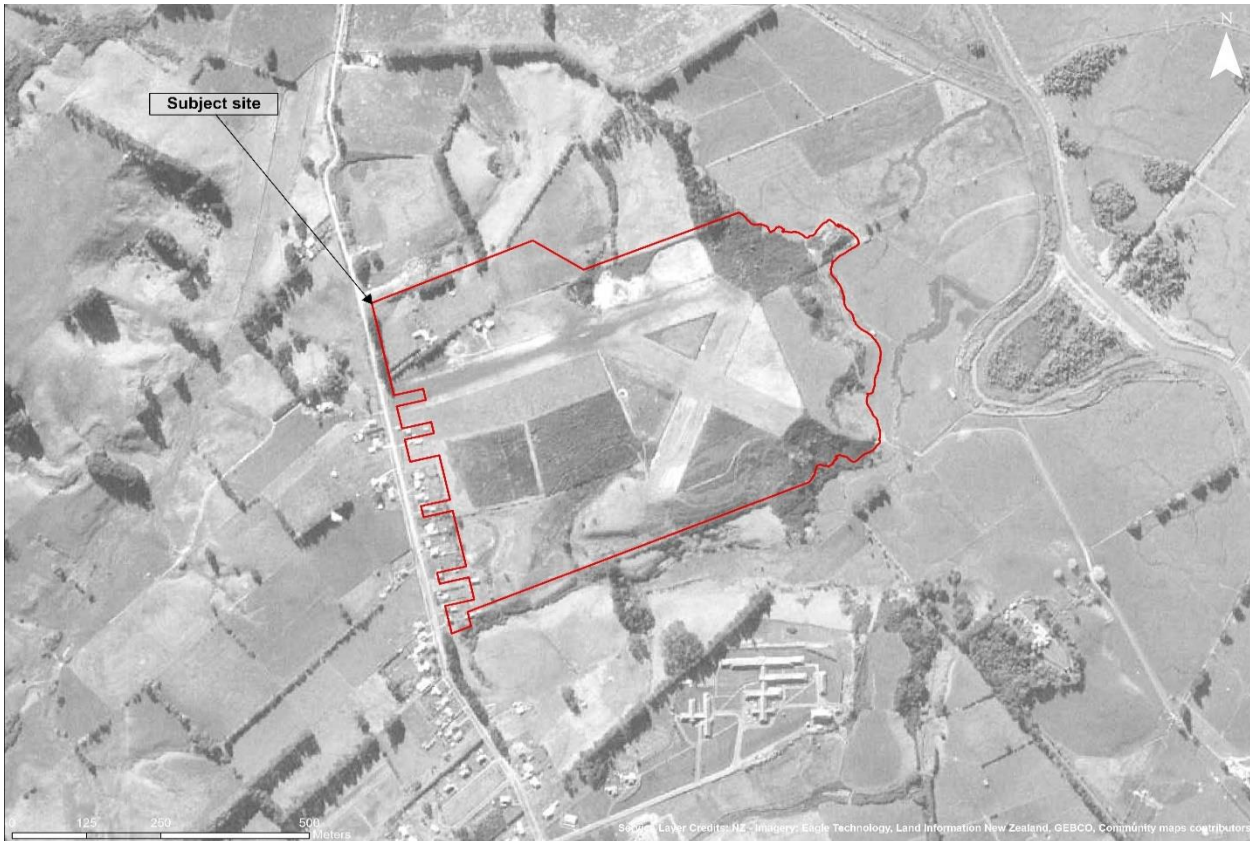


Figure 5: Showing the subject site and surrounds in 1966 (Source: Retrolens)

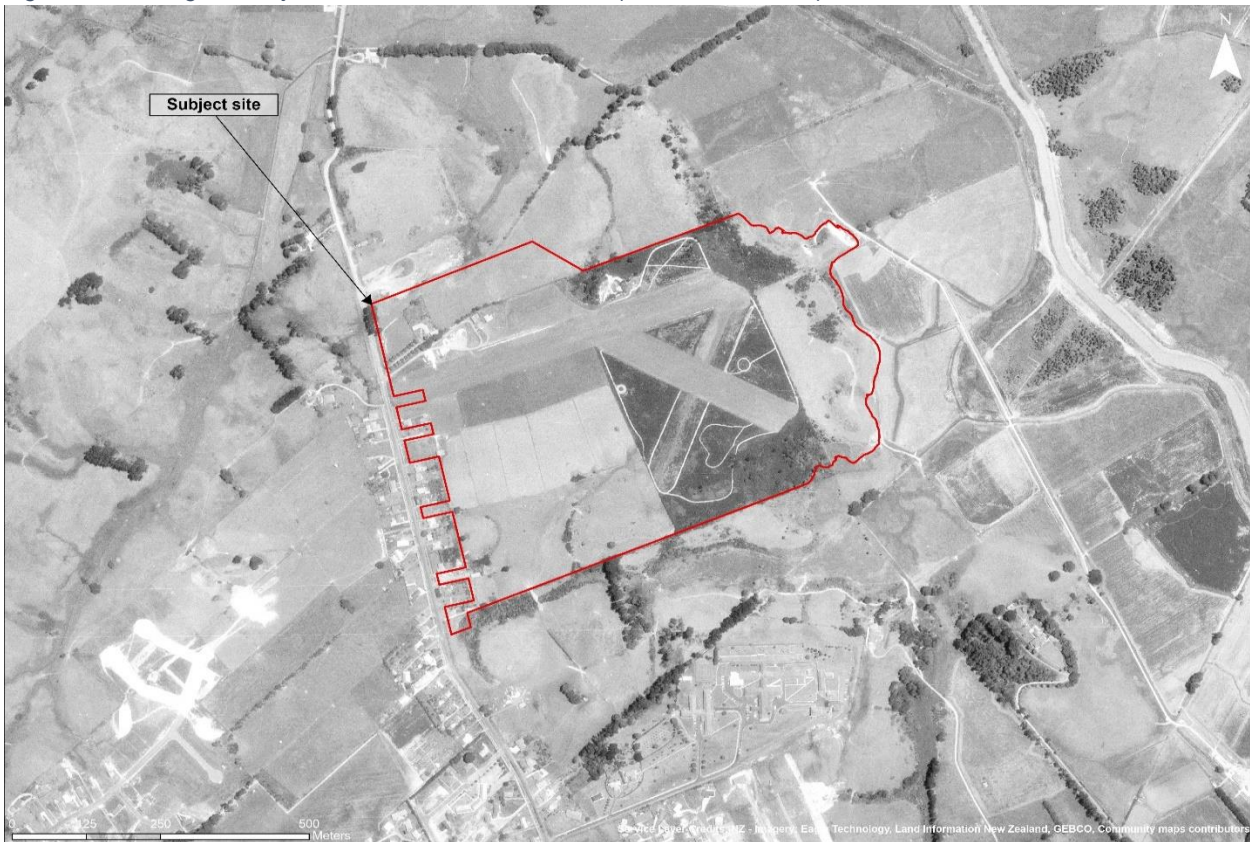


Figure 6: Showing the subject site and surrounds in 1979 (Source: Retrolens)



Figure 7: Showing the subject site and surrounds in the most recent aerial imagery 2018 (Source: NRC)

The site and surrounds as described above have been largely modified by Maori and European settlement. At present day (Figure 8), most of the site comprises of exotic grassland that is relatively uniform across the site, primarily dominated by kikuyu (*Cenchrus clandestinus*). As noted from the historic imagery, most of the native vegetation has been historically cleared, though small, scattered remnant patches of native kanuka, towai and mixed native treeland can be found along the north-eastern and south-eastern borders of the site respectively. Of note was the presence of multiple indicative wetland areas, and exotic pine stands running through the southern and central aspects of the site. Numerous artificial drainage channels (both relict and active) run throughout the site as well.



Figure 8: Showing the basic features of the site and surrounds

Under Land Environments of New Zealand (LENZ) the majority of the subject site and immediate surrounds is contained primarily within 'Category 2 Threatened Land Environment', where there is <10% indigenous cover remaining, with a strip of land curving along the eastern aspect of the site being identified as 'Category 3 Threatened Land Environment' with only 20-30% indigenous cover remaining (Figure 9) and 'Category 1 Threatened Land Environment' identified in the southwestern corner. Indigenous biodiversity in these 'At Risk' environments are more at risk of loss and decline if little of the environment has formal protection for natural heritage purposes. As such, proposals to protect and enhance indigenous vegetation in these areas are a high priority.

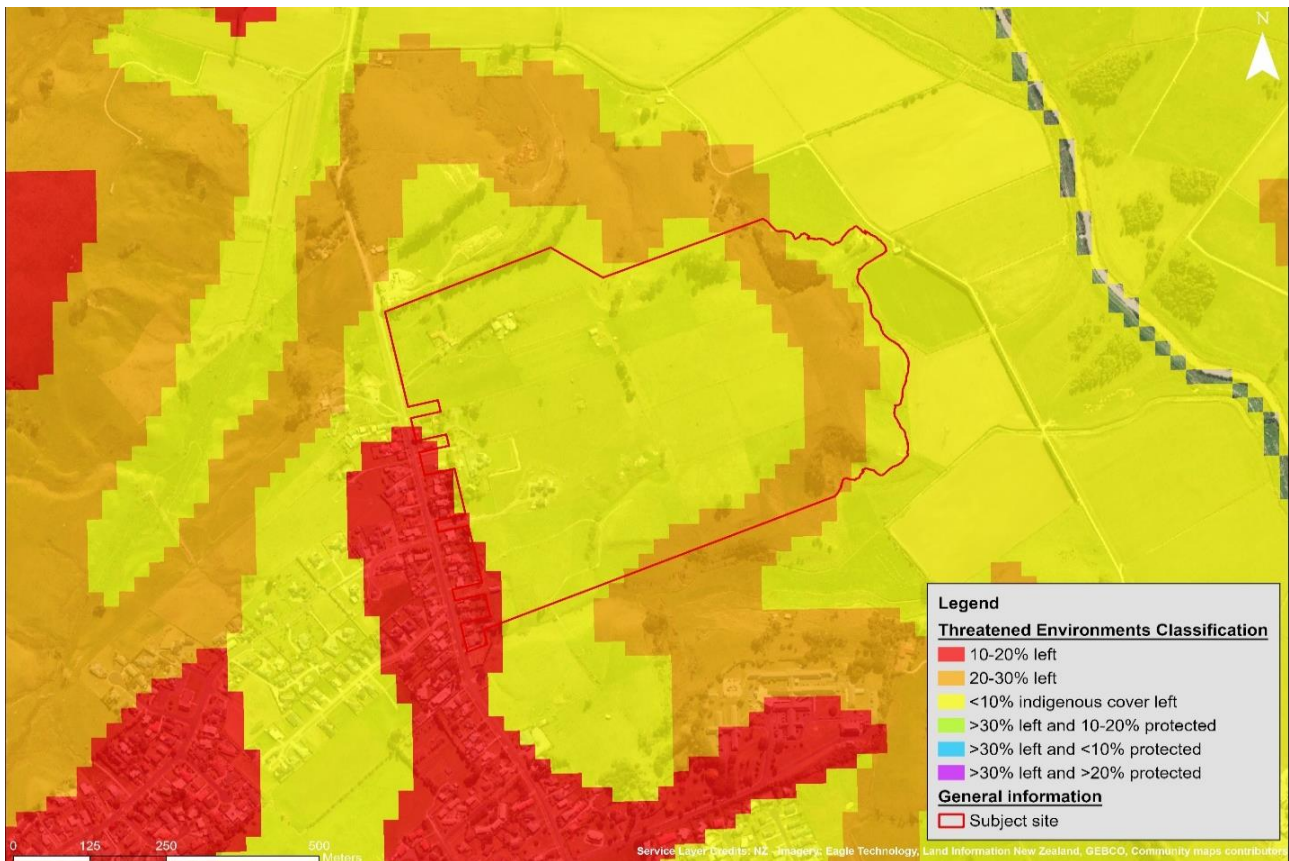


Figure 9: Showing the subject site and Threatened Environment Classification for New Zealand (2012)

The geology of the site is characterised by the Early Quaternary alluvium and colluvium (GNS 2022), with the Awhitu Group on the site's north-western fringe. The Early Quaternary alluvium and colluvium is composed of alluvial and colluvial gravel, sand and mud, commonly pumice-rich in central areas, with intercalated lignite or peat; locally includes non-welded ignimbrite and tephra, and, in the south and east, loess. The Awhitu Group is composed of cemented dune sand and associated facies.

The topography of the site is undulating in character and slopes to the east where it falls away towards the Awakino River at its eastern extent (Figure 10). The underlying soil is predominantly composed of Orthic Gley (GO) soil, with a strip of Perch-Gley Ultic (UP) soil winding through the eastern aspect of the site (Landcare Research 2022). Orthic Gley soils are soils that have been strongly affected by waterlogging, and often occur in low parts of the landscape where there are high groundwater tables. Perch-Gley Ultic soils are strongly weathered, well structured, and clay-enriched. They occur in clay or sandy clay areas with seasonal wetness and are often depleted of nutrients.



*Figure 10: Showing the site sloping eastwards towards the Awakino River*

To assess the site's agricultural production potential, we analysed the Land Use Capability (LUC) inventory, which aims to help achieve sustainable land development and management throughout New Zealand. LUC inventory classifies land into eight classes according to its long-term capability to sustain one or more productive uses. According to data accessed from NZLRI, the Kaipara District contains no highly productive elite land (LUC Class 1) with approximately 10% of the district being classified as prime land (LUC Classes 2 and 3), extending primarily along the floodplains of the Wairoa River. The priority for LUC Classes 1-3 is to maintain the potential for these high-quality soils to be used for agricultural purposes, rather than activities that are not dependent on soil quality.

There is a mosaic of Land Use Classes (LUC) extending over the site (Figure 11). Along the site's western aspect, the site is predominantly covered by LUC 4 land, which has moderate suitability for occasional cropping, pasture or forestry land. LUC 3 has been identified along the eastern fringe boundary of the site and is land with moderate arable cropping suitability, and moderate pastoral grazing suitability. The interface between the eastern and western aspects is dominated by LUC 6 land and is not suitable for arable use, and is more well suited for low production pastureland, forestry land, or in some cases vineyards. Lastly, the southwestern corner of the site has been classified as 'town' land.

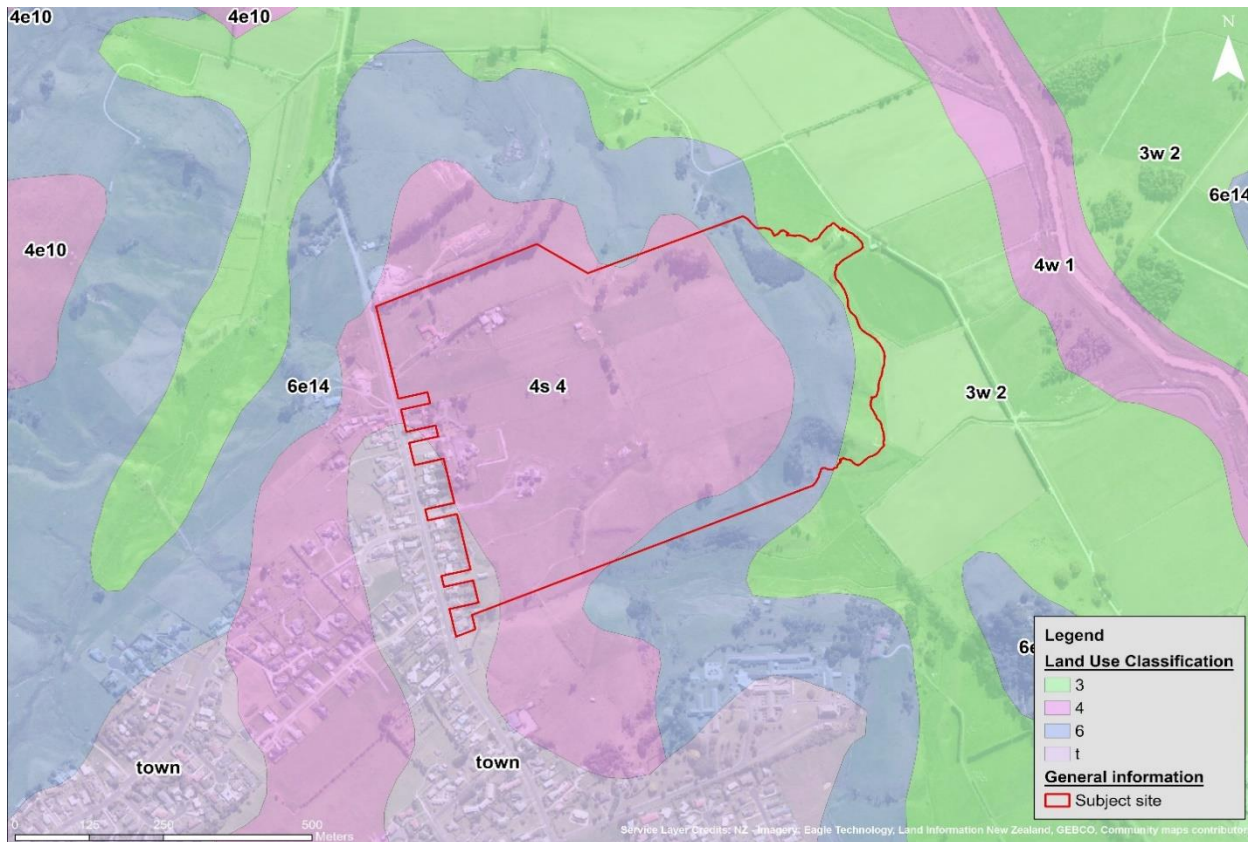


Figure 11: Showing the LUC classification for the site

### 3.2.2 Protected Natural Areas

The site is surrounded by several Reserve Management Units (RMUs) and Protected Natural Areas (PNAs) as designated in the Natural Areas of Kaipara Ecological District (Northland Conservancy) Reconnaissance Survey Report for the Protected Natural Areas Programme (Smale *et al.* 2009) (Figure 12). The PNAs include:

- Southeast: Rowlands Road Remnant (P07098)
- South: Dargaville Bridge Forest (P07173)
- Southwest: Lower Kaihu River Forest Fragments (P07169)
- West: Hokianga Road Railway Treeland (P07169a) and Hokianga Road Forest (P07164)

It is thought that historically all these areas would have formed an uninterrupted habitat sequence but have been modified and isolated by agricultural activities and urbanisation over time. The introduction of pest plant and animal species has also resulted in modification and degradation of indigenous habitats on site and surrounds.

Of note, is the Hokianga Road Railway Treeland (P07/169a) as it is the closest PNA with its eastern boundary falling approximately 1 km from the site. It is 9 ha in size and contains 'Threatened' avifauna species and rare native wetland plants. It is composed of dense ti kouka forest over pampas with occasional kahikatea.



Figure 12: Map showing the subject site and nearby PNAP and RMU areas

## 4.0 ECOLOGICAL SURVEY RESULTS

### 4.1 Flora & Fauna field survey methodology

A field survey was undertaken on the 18<sup>th</sup> of March 2022. To provide an assessment of the vegetation making up the relevant habitat types the entire site was investigated. A rapid fauna survey was also conducted to record the presence of avifauna and assess the potential habitat for ichthyofauna, herpetofauna and chiroptera. The study of historic and recent aerial imagery, and ground truthing was utilised to delineate the ecosystem types and flora on the site and surrounds.

### 4.2 Terrestrial habitats

#### 4.2.1 General habitat description

The site primarily comprises of improved pasture with areas of native treeland (kanuka, towai and mixed native treeland) and exotic pine treeland. Some of these remnants of native treeland have likely persisted for some time and are evident as regenerating or remnants in the 1957 imagery of the site. Areas of terrestrial vegetation are shown within Figure 13 below.





Figure 13: Showing general habitat descriptions

#### 4.2.2 Native treeland

The kanuka treeland near the site's north-eastern boundary comprises of a canopy of kanuka (*Kunzea robusta*) up to 12 m in height with scarce totara (*Podocarpus totara*) and mamangi (*Coprosma arborea*) (Figure 14). Generally, the lower tiers have been eliminated or maintained by livestock with a few hardy species such as rasp fern (*Doodia australis*) and the native slender rice grass (*Microlaena stipoides*). Weedy pest plants could be found throughout including woolly nightshade (*Solanum mauritianum*), blackberry (*Rubus fruticosus* agg.), arum lily (*Zantedeschia aethiopica*), stone parsley (*Sison amomum*), kikuyu and a mixture of common pastoral grasses and herbs. Some smaller scattered examples of this habitat could be found across the site but generally only consisted of several trees (Figure 15).

An area of towai treeland is present near the south-eastern boundary and comprises of a stand of towai (*Pterophylla sylvicola*) up to 14 m in height (Figure 16). Adjoining the towai treeland is a small area consisting of a mixture of totara, kanuka, kahikatea (*Dacrycarpus dacrydioides*) and nikau (*Rhopalostylis sapida*).



*Figure 14: Showing area of kanuka treeland on site*



*Figure 15: Showing scattered areas of kanuka treeland*



Figure 16: Showing towai treeland and mixed native treeland

### 4.2.3 Improved pasture and Exotic pine treeland

Much of the wider site has historically and currently been maintained for the purpose of grazing livestock. Generally, the pasture sward is dominated by kikuyu with a mixture of other pastoral grasses and herbs. The lower alluvial floodplains on the eastern part of site are currently utilised for growing kumara. Small stands of mature Monterey pine (*Pinus radiata*) can be found on the northern and southern boundaries.



*Figure 17: Showing pastoral sward in the central part of the site dominated by kikuyu*



*Figure 18: Showing lower eastern part of the site utilised for cropping*

## **4.3 Freshwater habitats**

### **4.3.1 General habitat description**

The subject site contains a network of significantly modified watercourses including artificial drainage channels, ephemeral and intermittent streams. The catchment description and context is also described in the Draft Stormwater Management Plan prepared by Chester (dated 14/04/2022).

A section of the Awakino River flows near the eastern boundary of the site, where much of the site's water discharges into via a network of artificial drainage channels. The artificial drains are best described as ephemeral in nature, but due to the historical wet nature of the site given its underlying geology, several indicative wet seeps and wetlands areas are present within and abounding the site (S1 & W1 - W6) described below in section 4.3.2. There are also a few naturally occurring streams on site which are best described as ephemeral streams (E1-E7), and intermittent stream features extend through the site's central, and north-eastern aspects (I1 & I3). These too eventually discharge into the Awakino River via drain systems of the larger site, and intermittent streams off site (I2 & I4). Overall, there are 7 ephemeral streams, 2 intermittent streams and 7 artificial drains within the development footprint. There are also 6 wetland features (W1-W6) abounding the development area whose setback buffers fall within the developmental footprint.

The waterbodies on the subject site were delineated using a handheld GPS, while the wider stream systems were obtained from LINZ Data Service. A basic overview of the hydrological features on the site is provided below in Figure 19. Five 'natural inland wetland' habitats as defined under the Resource Management Act 1991 (RMA) and National Policy Statement for Freshwater Management 2020 (NPSFM) were identified on-site, and one off-site during the field surveys.

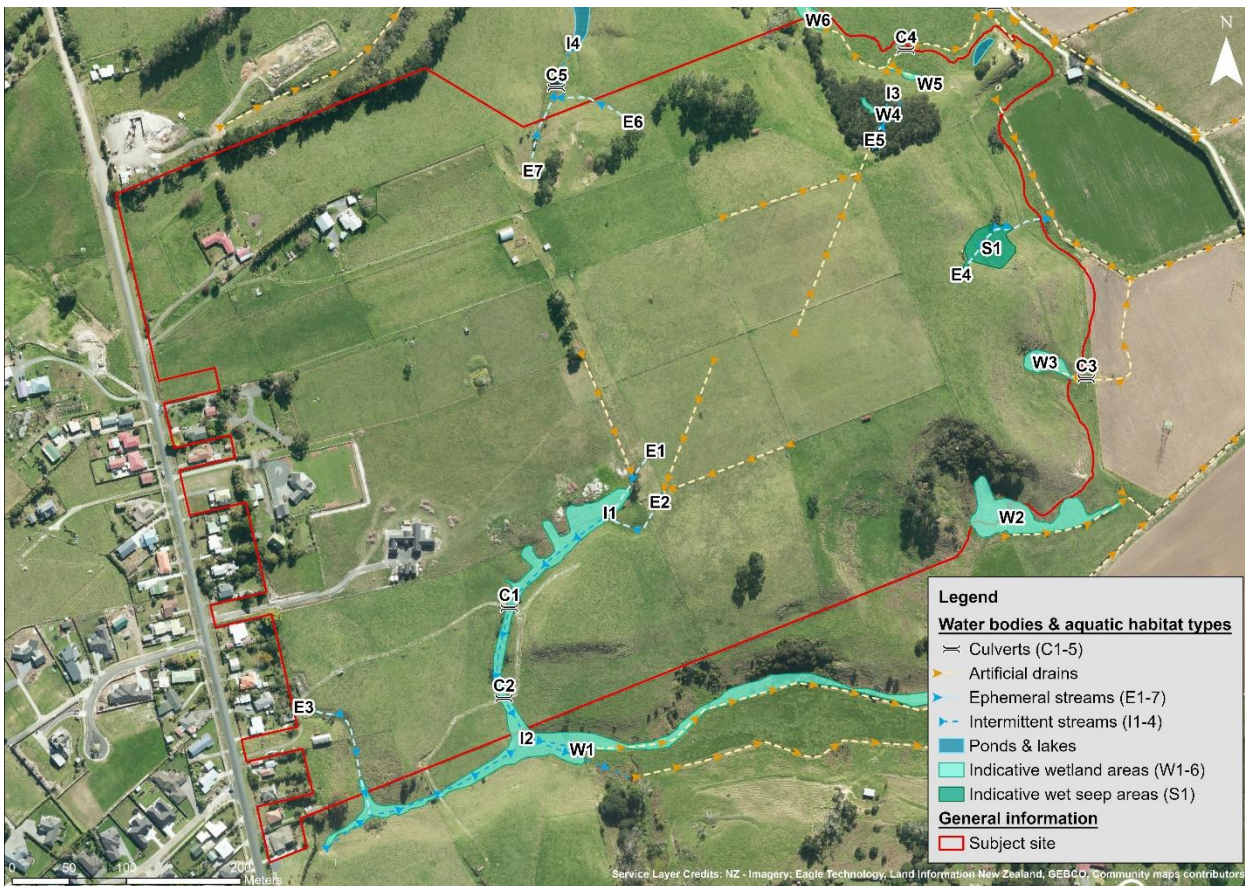


Figure 19: Showing the general hydrology of the subject site

### 4.3.2 Indicative wetland and wet seep areas

Generally, the wetland areas on site appear to be best represented as ‘induced wetlands’ occurring as a combination of the underlying geology paired with a high-water table, or along springs where they emerge from the sloped areas. Some of the wetland areas appear to be ephemeral in nature due to being fed by historic drainage channels during rainfall events. The types of vegetation in areas likely to meet the RMA/NPS-FM definition of a wetland was identified and are described below.

Please note that due to the small size, ephemeral nature of the wetland areas and continued agricultural land use/improvements on site, further delineation and assessment of these features will be required as part of land development and subdivision consents following the PPC.

### 4.3.3 Wetland 1 (W1)

W1 originates near Awakino Road extending along intermittent stream margins and over a small arm extending from the central aspect of the site southwards. It is considered that the wetland is ephemeral in nature and is fed by the surrounding landscape via artificial drains and ephemeral streams. Generally, the feature is part of the wider pastoral sward but at the time of site visit was dominated by hydrophytic (‘facultative wetland’) rushes (*Juncus sp.*).



Figure 20: Showing the upper central area of W1

#### 4.3.4 Wetland 2 (W2)

W2 generally forms part of the wider pastoral area on the lower southern aspect of the site. The area contained waterlogged hydric soils with visible pooling. The vegetation was dominated by hydrophytic ('facultative wetland' and 'obligate') species including mercer grass (*Paspalum distichum*) with large patches of water pepper (*Persicaria hydropiper*), rushes including broom rush (*Juncus sarophorus*), wiwi (*Juncus edgarie*) and (*Juncus australis*). Of note where small patches of orange nut sedge (*Machaerina rubignosa*).



Figure 21: Showing W2 near the southern boundary of the site

#### 4.3.5 Wetland 3 (W3), Wetland 4 (W4), Wetland 5 (W5) and Seep 1 (S1)

These wetland and seep areas appear to be spring fed as they emerge from the hillsides on the northern and eastern part of the site.

W3 contained waterlogged hydric soils and the vegetation was dominated by hydrophytic ('facultative wetland' and 'obligate') species including large patches of water pepper, rush (*Juncus* spp.). Of note were large patches of orange nut sedge (*Machaerina rubiginosa*) dispersed with kiokio (*Blechnum novae-zelandiae*) (Figure 22).

Other features along the eastern/north-eastern boundary of the site included Wet Seep area (S1) which was largely dominated by kikuyu and regenerating kanuka, but the hydrophytic ('facultative wetland') species giant rush (*Juncus pallidus*) was dotted throughout (Figure 23).

Among the kanuka treeland, a distinctive flow pattern (Wetland 5) was observed to be dominated by hydrophytic ('facultative' and 'obligate') species including native willow weed (*Persicaria decipiens*) dispersed with arum lily (*Zantedeschia aethiopica*) (Figure 24). The wetland area and associated watercourses appear to seep into the ground and emerge within drains and wetland features near the flat areas W5 and W6 (Figure 25 and Figure 26).





*Figure 22: Showing (W3) near the eastern boundary*



*Figure 23: Showing wet seep (S1) feature near eastern boundary*



Figure 24: Showing wetland (W4)



Figure 25: Showing wetland (W5)



Figure 26: Showing wetland (W6)

#### 4.3.6 Aquatic diversity

A quantitative search of the New Zealand Freshwater Fish Database (NZFFD, accessed March 2022 revealed records of five native fish and one native invertebrate species (Table 3) being present within the wider Waitaia Stream catchment.

Table 3: Freshwater fish and invertebrate species recorded within the wider Awakino River catchment

Scientific name	Common name	Conservation status
<i>Anguilla australis</i>	Shortfin eel	Endemic and Not Threatened
<i>Anguilla dieffenbachii</i>	Longfin eel	Native & Declining (At risk)
<i>Galaxias fasciatus</i>	Banded kokopu	Endemic and Not Threatened
<i>Gobiomorphus huttoni</i>	Redfin bully	Native and Not Threatened
<i>Gobiomorphus cotidianus</i>	Common bully	Native and Not Threatened
<i>Paranephrops</i> spp.	Koura	Native & Declining (At risk)
<i>Galaxias maculatus</i>	Inanga	Native & Declining (At risk)

The records show that 3 Native & Declining (At risk) aquatic fauna species have been previously recorded within the wider Awakino River catchment, including long-fin eel (*Anguilla australis*) and northern koura (*Paranephrops planifrons*) as well as the 'Regionally Significant' banded kokopu (*Galaxias fasciatus*), and some are likely to also be present within the onsite stream during periods of heavy rainfall.

Longfin eel, endemic to New Zealand, can access inland water bodies by climbing, but is less inclined to tolerate poor water quality (NIWA 2020) than the endemic shortfin eel. The presence of the longfin eel provides some reassurance that the instream water quality in this stream catchment is somewhat good as they are less tolerant to environmental change and pollution (Department of Conservation 2018). Longfin eel classified "At Risk - Declining" by the NZ Threat Classification System is a declining species and unless habitat is protected, and commercial fishing interests negated it has a predicted rate of rapid decline (Goodman *et al.* 2013).

Koura can live in native forest or pasture, but will live longer in the former, because they can be affected by an increase in water temperature (NIWA 2018). In addition, koura has recently been ranked as moderately vulnerable to climate change in a recent study carried out in partnership between NIWA and Te Wai Maori Trust (2020). Habitat stability, cover and stream depth are important for koura survival, as it acts as a food source and shelter from predators and flood events. Therefore, koura populations are significantly impacted by change in land use and habitat disturbance (Parkyn & Collier 2004).

Adult banded kokopu usually live in pools of small tributaries where there is virtually a complete overhead canopy of vegetation. They only occur in pools where there is instream cover such as an undercut bank, large rocks or wood debris. They depend on terrestrial insects for a large proportion of their diet thus vegetation cover is seen as an essential food source for this species (NIWA 2018).

The site itself is not considered to contain optimal ichthyofauna habitat due to the long history of anthropogenic land use change through habitat clearance, dredging, culverting and straightening of natural land drainage patterns. The overall quality of the aquatic habitat onsite is low, and is further limited by lack of riparian vegetation cover and associated wider agricultural use of the site with associated effects from grazing, fertiliser and pesticide inputs to the land.

#### 4.4 Avifauna

The variety of habitats present and adjacent to the subject site and surrounding area provides for an ecotone transitional sequence dominated by agricultural pastureland grading into areas of regenerating wetland and indigenous bush and the most commonly recorded species were a mixture of native and introduced pasture and wetland bird species (Table 4). The birds observed on site are representative of the modified and fragmented habitat types abounding urban and peri-urban areas.

Some common introduced and native bird species such as house sparrow (*Passer domesticus*) and European goldfinch (*Carduelis carduelis*) were observed in abundance throughout the pastoral areas. Several grey warblers (*Gerygone igata*) and New Zealand fantails (*Rhipidura fuliginosa*) were observed within the kanuka and towai treeland habitats. Sacred kingfishers (*Todiramphus sanctus*) were observed nesting in the banks of the sandstone outcrop (Figure 27). Paradise shelduck (*Tadorna variegata*), black shag (*Phalacrocorax carbo*) and mallard (*Anas platyrhynchos*) were observed roosting and foraging in the riparian habitats on the site and surrounds. Flocks of eastern rosella (*Platycercus eximius*) were observed flying overhead. Overall, the diversity of birds observed was low, with 8 native/endemic and 4 introduced species.

Table 4: Bird species recorded on the site during site visit in March 2022

Scientific name	Common name	Conservation status (Robertson et al. 2021)
<i>Anas platyrhynchos</i>	Mallard	Introduced & Naturalised
<i>Carduelis carduelis</i>	European goldfinch	Introduced & Naturalised
<i>Gerygone igata</i>	Grey warbler	Endemic & Not Threatened
<i>Hirundo neoxena</i>	Welcome Swallow	Native & Not Threatened
<i>Passer domesticus</i>	House sparrow	Introduced & Naturalised
<i>Phalacrocorax carbo</i>	Black shag	Native & Naturally Uncommon
<i>Platycercus eximius</i>	Eastern rosella	Introduced & Naturalised
<i>Rhipidura fuliginosa</i>	New Zealand fantail	Endemic & Not Threatened
<i>Tadorna variegata</i>	Paradise shelduck	Endemic & Not Threatened
<i>Todiramphus sanctus</i>	Sacred kingfisher	Native & Not Threatened
<i>Vanellus miles</i>	Spur-winged plover	Native & Not Threatened
<i>Zosterops lateralis</i>	Silvereye	Native & Not Threatened



Figure 27: Showing the sacred kingfisher nesting hollows observed on site

Other notable avifauna previously recorded within 1 km of the site based on data within the Kaipara ED PNAP Report include the 'Nationally Critical' Australasian bittern (*Botaurus poiciloptilus*) and the 'At-Risk Declining' North Island fernbird (*Bowdleria punctata vealeae*), in addition to other more common bird species being recorded from the nearby Hokianga Road Railway Treeland (Smale *et al.* 2009). A further search through the iNaturalist database returned accounts of 'Endemic & Declining' New Zealand pipit (*Anthus novaeseelandiae*) identified nearby. While NZ pipit may occasionally forage within the site, the presence of bittern and fernbird within the boundaries of the subject site is unlikely given the lack of suitable habitat present.

## 4.5 Herpetofauna

A diurnal herpetofauna search was conducted on site which involved checking beneath dense vegetation, logs, boulders and man-made objects. Any potential habitat on site that would be viable for herpetofauna to use for breeding, foraging or sheltering was also noted during the site visit. During the site visit several rainbow skinks (*Lampropholis delicata*) were observed basking along the edge of the onsite bush areas. All lizards, except for the introduced rainbow skink are legally protected under an amendment to the Wildlife Act 1953 and their habitats by the Resource Management Act 1991 (Anderson *et al.* 2012). A significant component of our lizard fauna (~85%) are recognised as 'Threatened' or 'At Risk' in Threat Ranking Lists (Hitchmough *et al.* 2015). A full quantitative survey of herpetofauna was deemed unnecessary given the lack of suitable habitat available for native herpetofauna on the subject property. No Native or Endemic herpetofauna species were observed during the site visit.

A further desktop analysis was conducted which examined multiple datasets of herpetofauna records. Although no lizards have been labelled as 'Regionally Significant' within the Kaipara ED, generally, the higher the conservation threat status of the species, the more significant they are. The Kaipara Ecological District PNAP report indicated that 3 herpetofauna species are known to be present within the greater Ecological District, but no native herpetofauna species are present in any of the surrounding PNAs near/adjacent to the site, and no suitable habitat for these species was identified on-site. The iNaturalist database was analysed and returned zero observations of herpetofauna within a 5 km radius of the site. Exploring available DOC data revealed 3 accounts of 'Native & Declining' copper skink (*Oligosoma aeneum*) within a 5 km radius of the subject site (Figure 28).

It is likely that the only herpetofauna species present on the site is rainbow skink (*Lampropholis delicata*). Rainbow skinks arrived in New Zealand in the late 1960s, but only became classified as an 'Unwanted Organism' in recent years and removed from the Wildlife Act in 2010 (DoC 2015). Rainbow skinks, once identified, can be trapped and disposed of however no known way to fully eradicate these species has been suggested, while their spread can be prevented by taking extreme care when moving objects, especially potting mix in potted plants (known to be favoured breeding habitat for rainbow skinks) which should be checked for eggs prior to relocation and planting works (Wairepo, 2015).

The current ecological value for native herpetofauna is therefore considered to be low. This is associated with a long history of disturbance, land clearance, predation by common pest animals and habitat fragmentation.

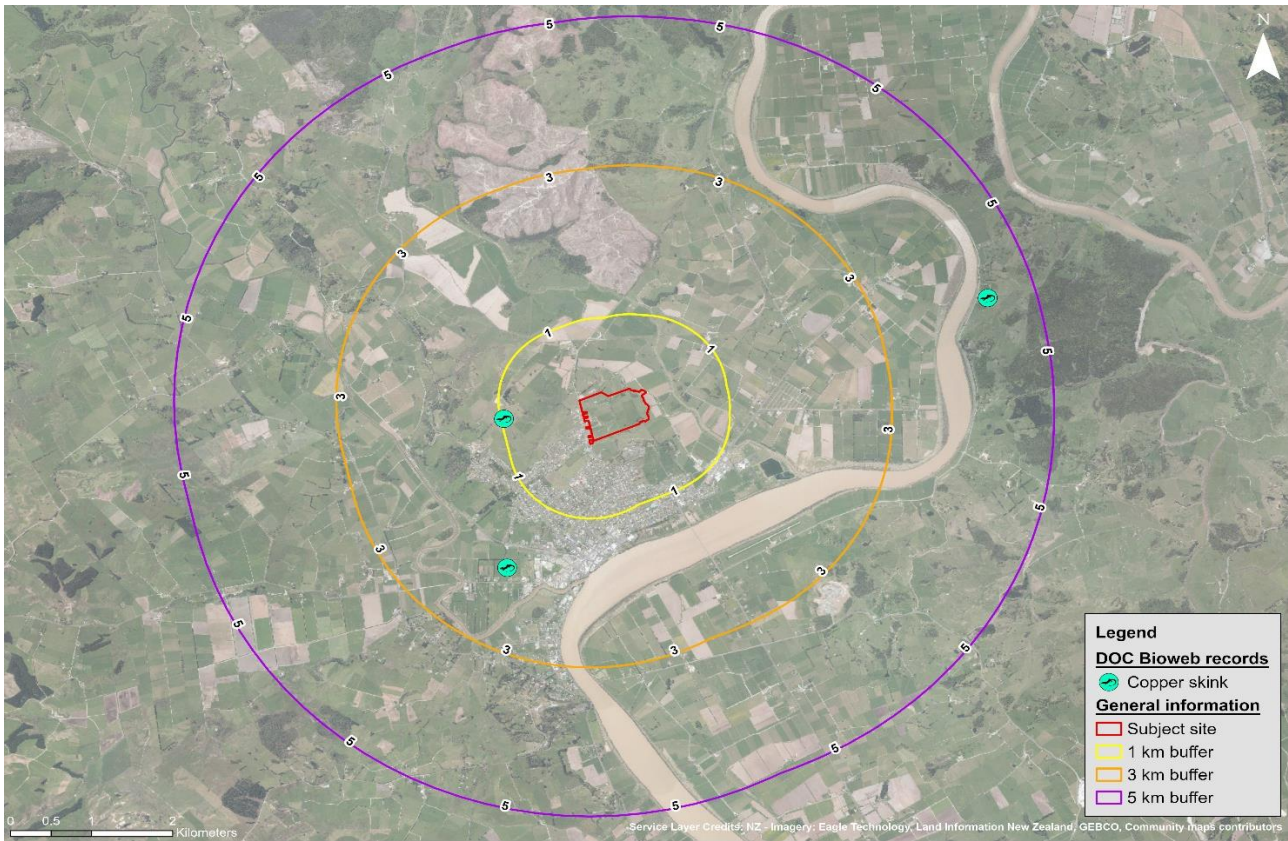


Figure 28: Showing DoC data accounts of copper skink being sighted within 5 km of the subject site

### 4.6 Chiroptera (Bats)

New Zealand has two extant native bat species, the long-tailed bat (*Chalinolobus tuberculatus*) and the lesser short-tailed bat (*Mystacina tuberculata*), both of which are endemic microbat species. Long-tailed bats is listed as 'Threatened - Nationally Critical' (Donnell *et al.* 2017). Native bats are 'absolutely protected' under the Wildlife Act (1953).

It is considered that the habitat contained within the subject site is unsuitable for both short-tailed bats and long-tailed bats as the species are typically associated with large tracts of mature native forest or forested areas along watercourses. Short-tailed bats are not known to be present within 50 km from the subject site, and the closest record for long-tailed bats according to the National bat database (DOC 2022) is approximately 21 km to the east of the site within Tangihua Forest recorded in 2011.

### 4.7 Summary of values

In assigning ecological value to identified terrestrial and aquatic features and species noted across the subject site, the ecological matters of Representativeness, Rarity/Distinctiveness, Diversity and Pattern, and Ecological Context have been considered, based on the EIANZ 2018 guidelines.

Table 5 below outlines the ecological values assigned to the identified ecological features of aquatic and terrestrial vegetation, ichtyofauna (fish), chiroptera (bats), avifauna (birds), and herpetofauna (lizards). We consider that the overall existing ecological values of the site are generally low and associated with the long history of indigenous vegetation clearance on site along with modification to aquatic habitats and the site's

general agricultural use and associated effects on natural habitats and species through continuous application of fertiliser, resowing and insecticides/pesticides.

Table 5: Terrestrial and aquatic ecological values at the subject site

Feature	Representativeness, Rarity/distinctiveness, Diversity and Pattern, Ecological Context:	Value
Terrestrial habitat/vegetation	Low diversity of native vegetation presence limited to scattered pockets of remnant kanuka and towai with little understory. Most of the site was covered in exotic pasture dominated by kikuyu.	Low
Aquatic habitat/vegetation	The subject site contains a network of significantly modified watercourses including artificial drainage channels, ephemeral and intermittent streams. Some areas were deemed to meet the definition of a 'natural inland' wetland as defined under NPSFM (2020), however these are dominated by a mixture of common exotic and to a lower extent indigenous species. According to the EIANZ criteria, their overall ecological values is deemed as low, however we recognise the intent of NPSFM policies to avoid adverse effects on any 'natural inland wetland' areas.	Low
Avifauna	No 'Threatened' or 'At Risk' avifauna was recorded at the site, and only low numbers and diversity of native species was recorded. There was minimal indigenous bird feeding, roosting or nesting habitat on site.	Low
Herpetofauna	No indigenous herpetofauna was recorded on site, with the nearest record of a copper skink ('Native - Declining') being approximately 1 km east of the subject site. No optimal habitat for herpetofauna is present on site.	Low
Bats	No suitable roosting or nesting habitat for short-tailed or long-tailed bats noted on site or immediate area. Long tailed bats (Nationally Threatened – Critical) were not recorded within 25 km of the subject site.	Low
Ichthyofauna	A detailed survey of indigenous fish species presence was deemed outside the scope of this assessment. Sub-optimal habitat available for indigenous fish, likely limited to highly adaptable species such as banded kokopu and shortfin eel.	Low
Overall		Low

## 5.0 ASSESSMENT OF POTENTIAL ECOLOGICAL EFFECTS

### 5.1 Assessment of potential ecological effects and mitigation options

As this application is for a plan change, to change the zoning from rural to residential, physical site development associated with the PPC is unlikely to happen in the immediately foreseeable future. Furthermore, at this stage it is not known exactly how any future subdivision/lot layout, infrastructure provision would occur and hence the potential ecological effects cannot be accurately assessed at this stage. Barker & Associates have provided RDL with a potential yield study which indicates that all existing indigenous vegetation, wetland, pond and wet seep areas along with ephemeral and intermittent stream features will be enhanced and protected with minimum 10 m setbacks, which is deemed as appropriate given their existing ecological quality.

It is likely that some vegetation on site (both exotic and indigenous) as a part of the wider development of the site, and that some artificial drainage channels and streams may be piped or culverted. We cannot assess



these effects with a high degree of certainty and any potential ecological effects associated with a Resource Consent application following the successful rezoning of the site will need to be re-assessed and re-evaluated in a specific subdivision consent application.

Generally, the potential adverse effects of any development be divided into adverse effects resulting from

- Earthworks and sedimentation effects
- Vegetation clearance
- Establishment of stormwater and wastewater infrastructure and continuous discharges
- Reclamation of watercourses
- Removal and construction of new culverts
- Effects of indigenous fauna

Given that the overall potential subdivision or development layout following the PPC is unknown, we can only briefly assess the potential ecological effects below. Please note that this is a general assessment only and any site-specific assessment will require additional ecological assessments. A general overview of ecological values, magnitude of effect, potential remediation, mitigation or offsetting measures and overall level of effect for each of the proposed activities that have the potential to impact the terrestrial or freshwater environment in general accordance with EIANZ (Roper-Lindsay et al. 2018) is provided under Table 6. Freshwater and terrestrial ecological values were assessed as low based on field survey visits and analysis of previous data from the site and immediate areas. The before-mitigation level of effect for proposed activities were assessed as ranging between 'high and low', but with proposed mitigation measure in place, the overall level of effect will be reduced to between 'low and very-low' (Table 6).

Table 6: Magnitude and level of potential effects for proposed development before and after potential mitigation

Effect/activity	Potential habitat impacted	Ecological value	Magnitude of effect)	Level of effect (no mitigation)	Comment	Potential mitigation measures	Level of effect (with potential mitigation)
<b>Earthworks and sedimentation, smothering bed</b>	<b>Terrestrial and aquatic</b>	Low	High	High	Earthworks associated with the development of the site will have the potential to result in sediment runoff into the on-site waterways onsite that eventually discharge in the Awakino River.	<ul style="list-style-type: none"> <li>To mitigate the risk of sediment entering the onsite streams during site development works, and contaminating the downstream catchment, erosion and sediment control plans should be prepared in accordance with Northland Regional Council's Erosion and Sediment Control Guidelines.</li> </ul>	Low
<b>Vegetation clearance</b>	<b>Terrestrial and aquatic</b>	Low	Moderate	Moderate	<p>It is possible that some of the vegetation (both indigenous and exotic) is likely to be removed to facilitate development on site.</p> <p>Given that only low ecological quality vegetation was observed on site, we do not consider that the development of the site would result in the loss of vegetation of high botanical or ecological significance.</p> <p>If vegetation clearance is proposed this may require additional consents.</p> <p>Earthworks within and nearby (20 m) stream habitats may require a separate Resource Consent.</p>	<ul style="list-style-type: none"> <li>Sensitive development design, guiding development away from indigenous terrestrial and aquatic habitats</li> <li>If vegetation clearance is proposed, a Vegetation Clearance Protocol should be prepared, which includes procedures for minimising the area and duration of soil exposure from vegetation clearance, minimising the volume of vegetation to be mulched, locating wood residue piles with an appropriate separation distance from any waterways, and minimising potential leachate from the machinery used.</li> <li>Implementation of appropriate sediment, earthworks controls during vegetation clearance to avoid potential sedimentation.</li> <li>Vegetation clearance to take place using low impact machinery suited for site specific condition.</li> <li>Vegetation removal to take place outside of the peak bird breeding season (October to February, inclusive), where practicable.</li> <li>Implementation of pre-vegetation clearance ecological surveys to ensure that development footprint is clear of species with lesser mobility.</li> <li>Implementation of appropriate ecological supervision (and species relocation where necessary) during vegetation clearance to ensure</li> </ul>	Low

Effect/activity	Potential habitat impacted	Ecological value	Magnitude of effect)	Level of effect (no mitigation)	Comment	Potential mitigation measures	Level of effect (with potential mitigation)
						<p>that no indigenous fauna is killed during the clearance process</p> <ul style="list-style-type: none"> <li>Protect and enhance all other indigenous vegetation outside the immediate development footprint</li> </ul>	
<b>Stormwater and wastewater infrastructure and management</b>	<b>Stream habitats</b>	Low	High	High	All stormwater and wastewater management are to follow general conditions as outlined under Awakino Precinct Provisions	<ul style="list-style-type: none"> <li>To address the potential effects associated with the establishment and ongoing maintenance of stormwater and wastewater infrastructure and associated discharges, appropriate stormwater and wastewater management plans are to be prepared for the development proposal by a suitably qualified person.</li> </ul>	Low
<b>Reclamation of aquatic habitats resulting in permanent loss</b>	<b>Aquatic habitats</b>	Low	High	High	<p>All watercourses on site are either ephemeral, intermittent or artificial in nature, and have been subject to long history of modification and degradation. Overall ecological values are assessed as low. Some reclamation of artificial drains may be required to facilitate the development of the site.</p> <p>No 'natural inland wetland' habitats are to be reclaimed during site development process.</p> <p>It is understood that all wetland habitats identified on site shall be preserved and appropriately protected and enhanced as a part of the PPC proposal.</p>	<ul style="list-style-type: none"> <li>No reclamation of 'natural wetlands,' ephemeral, intermittent watercourses, wet seeps, and ponds</li> <li>An inspection of impact reaches will be carried out prior to stream works.</li> <li>Any proposed sections proposed to be reclaimed are to be carried out during a period where streams and drains are dry, or only hold small amounts of surface water, so are unlikely to support native fish when works will be carried out.</li> <li>Native fish salvage and relocation plan to address the potential effects reclamation of streams</li> <li>Best practice and erosion control measures to mitigate the potential effects of sediment and contaminates entering nearby waterways.</li> </ul>	Low

Effect/activity	Potential habitat impacted	Ecological value	Magnitude of effect)	Level of effect (no mitigation)	Comment	Potential mitigation measures	Level of effect (with potential mitigation)
Avifauna	Terrestrial habitat	Low	Moderate	Moderate	Only common and mobile avifauna noted on site. No 'At Risk' of 'Threatened' avifauna noted on site, however works should be minimized to reduce disturbance.	<ul style="list-style-type: none"> <li>Vegetation removal (if any) is to take place outside of the peak bird breeding season (October to February, inclusive), as far as practicable, to avoid disturbance to active native bird nests or mortality of eggs/chicks. Where vegetation clearance cannot be achieved outside of this period, a pre-vegetation bird nesting survey should be carried out by a qualified ecologist.</li> </ul>	Low
Herpetofauna	Terrestrial habitat	Low	Low	Negligible	No suitable habitat for lizards was noted within the subject site or immediate surrounds. As such, any associated site development works and vegetation clearance is unlikely to have a direct impact on indigenous herpetofauna.	<ul style="list-style-type: none"> <li>All vegetation clearance works to be supervised by an appropriated qualified ecologist.</li> <li>Conduct vegetation clearance activities during warmer months, when lizards are active (October – April).</li> </ul>	Low
Fish	Aquatic habitat	Low	Moderate	Low	Site contains poor quality habitat for indigenous fish. Only likely species present are banded kokopu and short-fin eel.	<ul style="list-style-type: none"> <li>Prepare freshwater fish recovery protocol that outlines how fish capture and relocation will be undertaken prior to any instream disturbance.</li> </ul>	Low
Bats	Terrestrial	Negligible	Low	Negligible	No bat presence recorded on site and no suitable habitat present on site.	<ul style="list-style-type: none"> <li>Not required as no suitable habitat on site or immediate surrounds.</li> </ul>	Very low
Overall assessment		Low	High				Low

## 6.0 AWAKINO PRECINCT PROVISIONS

As a part of the Proposal, Barker & Associates have prepared 'Awakino Precinct Provisions', which outlines a number of proposed objectives, policies and rules relating to performance standards for residential land use within the proposed Awakino Precinct.

RDL have worked with Barker & Associates to establish relevant provisions relating to the protection of ecological features noted on site to ensure that these are protected and enhanced as part of any subsequent land development or subdivision proposal within the Awakino Precinct.

From an ecological perspective, RDL considers that the site contains some terrestrial and aquatic habitats of generally low existing ecological values, however some features, in particular the aquatic habitats noted on site, form connections to the wider landscape and ultimately the Awakino River and therefore should be protected and enhanced as a part of the overall development of the site. All natural features noted on site should be protected and enhanced as a part of any site development proposal. Therefore, the following recommendations were made by RDL:

- Maintain an interconnected network between all existing natural features on site (including natural wetland features, intermittent and permanent streams, and indigenous vegetation).
- Ensure that all natural features on site are not adversely affected by land development/subdivision.
- Any land development/subdivision proposal for the site should demonstrate how these features will be enhanced and permanently protected.
- Appropriate setbacks to be applied between proposed features to be protected and the overall development footprint.

Having reviewed the Awakino Precinct Provisions these recommendations have been fully incorporated within Policy AHP-P4 Awakino Precinct Ecological Values which requires that:

*Protect and restore the values of all natural wetland features, intermittent and permanent streams, and indigenous vegetation within the Awakino Precinct when undertaking land use and subdivision, with particular regard to:*

1. *Maintaining the interconnected network between the natural features.*
2. *Method of enhancement and permanent protection of the natural features; and*
3. *Appropriate setback of residential activities.*

Under proposed Rule 13.13A 'Awakino Precinct Subdivision' any subdivision within the Awakino Precinct shall comply with information requirements outlined under Rule 17 which in relation to ecological considerations requires that

*An Ecological and Wetland Assessment and Ecological Management Plan shall be prepared to ensure that existing natural features and ecological values on site are appropriately enhanced as a part of site development.*

Overall, RDL considers that the proposed Precinct Provisions and associated policies, objectives and rules, where they relate to protection and enhancement of ecological features on site, provides detailed guidance as to how ecological effects following the PPC associated with land subdivision/development within the subject site can be sufficiently avoided, reduced or mitigated, and would in fact allow for the enhancement and permanent protection of these features.

## 7.0 RELEVANT PLANNING CONSIDERATIONS

The following section summarises the ecological considerations in relation to local, regional and national policy statements and regulations associated with the preservation and mitigation of effects related to potential development of the site. In respect to the proposal, we consider the following to be applicable:

- National Policy Statement for Freshwater Management 2020
- Resource Management (National Environmental Standards for Freshwater) Regulations 2020
- The Operative Kaipara District Plan 2013
- Proposed Regional Plan for Northland March 2022 - Appeals Version
- The Kaipara Spatial Plan - Ngā Wawata 2050

Policies and regulations relating to each of the specific plans are further outlined in sections below.

### 7.1 National Policy Statement for Freshwater Management 2020

New Zealand has historically lost most of its wetland extent. Those remaining are rare and valuable ecosystems. The Essential Freshwater package, including the National Environmental Standards for Freshwater (NESF), Freshwater National Policy Statement for Freshwater Management (NPSFM) and Stock Exclusion Regulations, that came into force in September 2020 introduced strong new policies and regulations to protect natural wetlands on a national scale.

The NPSFM sets out the objectives and policies for freshwater management under the Resource Management Act 1991. It came in effect on 3 September 2020 and replaces the National Policy Statement for Freshwater Management 2014 (amended 2017).

The NPSFM directs regional councils, in consultation with their communities to set objectives for the state of freshwater bodies in their regions and to set limits on resource use to meet these objectives. The core intent of the policies in the NPS-FM is to provide stronger protection for freshwater bodies and wetlands. It also places a statutory responsibility on territorial and consenting authorities to give effect to Te Mana o te Wai by prioritizing the health and wellbeing of our waterways. With respect to Te Mana o te Wai, the hierarchy of obligations for consenting authorities are;

1. first, to prioritise the health and well-being of water bodies and freshwater ecosystems;
2. second, the health needs of people (such as drinking water); and
3. third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

In relation to the proposed PPC of the subject site, we consider that full effect has been given to NPSFM through the protection and enhancement of all natural and semi-natural aquatic features including ephemeral and intermittent streams, wet seeps, ponds and 'natural wetland' areas identified within the boundaries of the site. Any potential adverse effects on freshwater environments to result as part of the site development works can be appropriately avoided, minimised or mitigated. RDL does not consider that land development on this site following the PPC would adversely affect the freshwater quantity and quality both on site and within the wider Awakino Stream catchment if best practice integrated design principles, erosion and sediment control guidelines are followed. The provisions outlined under the proposed Awakino Precinct Policies and Objectives are aimed at working with the natural patterns of the land and halting the degradation of aquatic habitats on the subject site, and therefore meets the policy objectives of the NPSFM.

## 7.2 Resource Management (National Environmental Standards for Freshwater) Regulations 2020

Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (NES-FW) set the standards for regulating activities that pose risks to the health of freshwater and freshwater ecosystems. Anyone seeking to undertake those activities will need to seek consent under the NES-FW, as well as under any relevant rules under the applicable regional and district plan.

Based on RDL field work and observations during the site visit in March 2022, it was deemed that some of the site's freshwater habitats are representative of 'natural inland wetland' habitats as per the definition under NPSFM. Given that following the PPC the site is likely to be developed into residential lots with associated infrastructure requirements that will fall within 100 m setback from the wetland features and associated stream systems on site, the development proposal will trigger the requirement for consents under the National Environmental Standards for Freshwater (2020), Kaipara District Plan (Operative) and the Proposed Regional Plan for Northland (Appeals) in relation to works within a 100 m setback from natural inland wetland features (Figure 29).

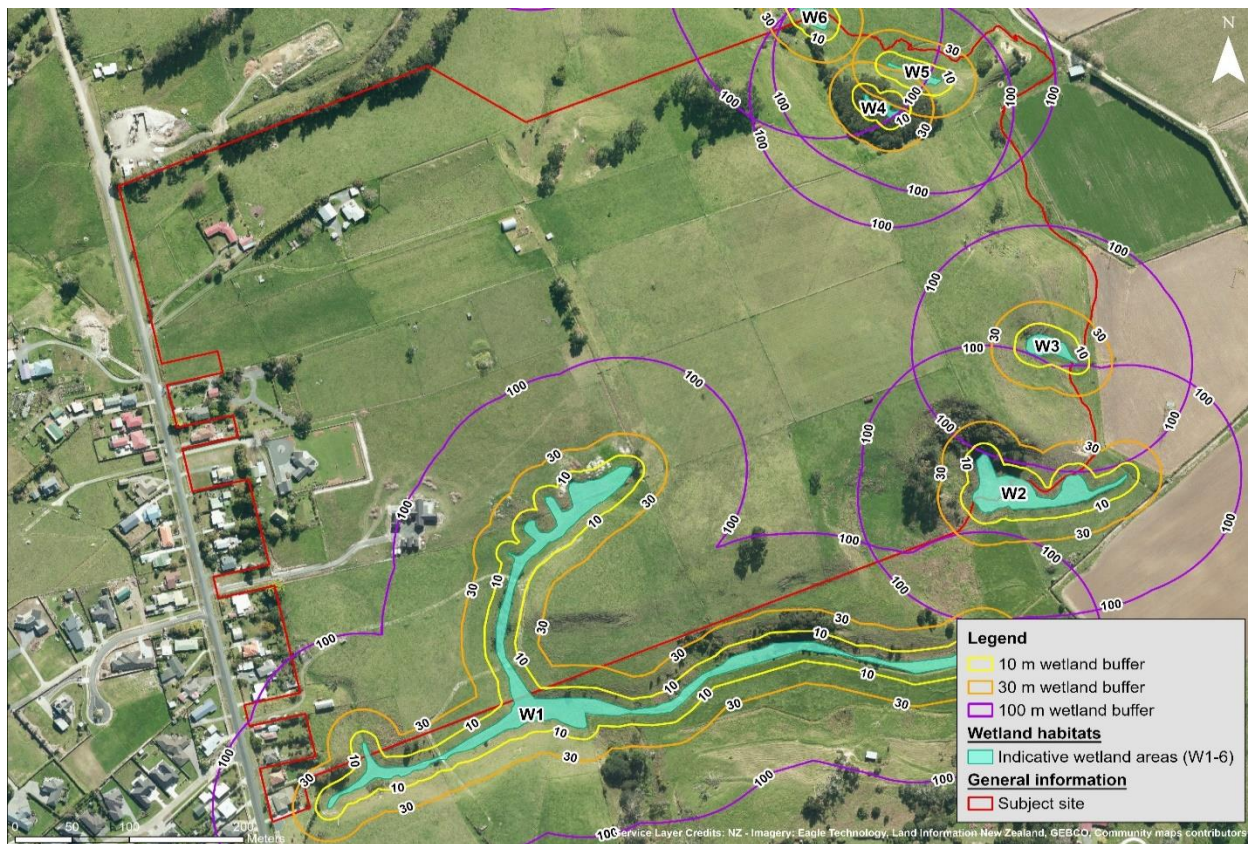


Figure 29: Showing the wetlands on site and in the greater area and their associated setbacks

It is thought that sufficient controls to avoid adverse effects on the 'natural inland wetland' features noted on site have been outlined within the provisions outlined under the proposed Awakino Precinct Provisions, which require that an Ecological and Wetland Assessment is submitted out as part of any land subdivision proposal of the site and that appropriate setbacks from 'natural inland wetland' areas are to be established. This should ensure that appropriate design and enhancement strategies to avoid adverse effects on wetland features on

site can be addressed at the time of a subdivision application, when detail design of the associated proposal is available.

### **7.3 Kaipara District Plan (Operative)**

This section addresses the following objectives and policies relating to the proposed development and any associated ecological or environmental effects under the Kaipara District Plan (Operative):

- Chapter 6 – Ecological Areas
- Chapter 12 – Rural
- Chapter 13 – Residential
- Chapter 25B - Integrated Development Guide
- Chapter 25G - Assessment of Ecological Significance



RELEVANT OBJECTIVES (ECOLOGY)	RELEVANT POLICIES (ECOLOGY)	DISCUSSION
<b>Chapter 6 – Ecological Areas</b>		
<p><b>6.5.1</b> To maintain and enhance the life supporting capacity of ecosystems, and the extent and representativeness of the District's indigenous biological diversity.</p> <p><b>6.5.2</b> To maintain ecological values through the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna while allowing appropriate subdivision, use and development.</p> <p><b>6.5.3</b> To promote active management of areas of significant indigenous vegetation and significant habitats of indigenous fauna.</p> <p><b>6.5.4</b> To protect the natural character of the coast, rivers and lakes and their margins within the District by avoiding, remedying or mitigating the adverse effects of surface water activities.</p>	<p><b>6.6.1</b> By progressively improving the level and accuracy of information on Significant Ecological Areas, so that it can be effectively used for information, education, non-regulatory and regulatory methods and monitoring.</p> <p><b>6.6.2</b> By managing the scale, intensity, and location of subdivision and land development activities in areas of significant indigenous vegetation or significant habitats of indigenous fauna.</p> <p><b>6.6.2b</b> Where disturbance of significant indigenous vegetation and significant habitats of indigenous fauna cannot be avoided, it should be undertaken in a way that, minimises and/or mitigates adverse effects as far as practicable, by: ·</p> <ul style="list-style-type: none"> <li>• Ensuring that any disturbance: <ul style="list-style-type: none"> <li>a) minimises any edge effects;</li> <li>b) avoids the removal of specimen trees;</li> <li>c) does not result in linkages with other areas being lost;</li> <li>d) avoids adverse effects on threatened species;</li> <li>e) minimises disturbance of root systems of remaining vegetation;</li> <li>f) does not result in the introduction of exotic weed species or pest animals; and</li> <li>g) does not result in the intentional or unintentional release of weeds or pest animals or the abandonment of domestic pets;</li> </ul> </li> <li>• Encouraging and where appropriate requiring the exclusion of domestic cats and dogs (except for working dogs as defined in the Dog Control Act 1996) in areas of high kiwi density (Appendix F to the Maps);</li> <li>• Encouraging and where appropriate requiring active pest control and removal and the provision of stock proof fencing to avoid the grazing of such areas; and</li> </ul>	<p>Site contains low quality terrestrial and aquatic ecological values.</p> <p>No Significant Ecological Areas present on site or immediate surrounds.</p> <p>No significant indigenous vegetation or flora noted within the boundaries of the site.</p> <p>No disturbance to significant indigenous vegetation or flora is proposed.</p> <p>Appropriate enhancement and restoration of degraded habitats on site is proposed as part of the proposal.</p>

RELEVANT (ECOLOGY)	OBJECTIVES	RELEVANT POLICIES (ECOLOGY)	DISCUSSION
	<ul style="list-style-type: none"> <li>Encouraging planting and restoration. Eco-sourcing is preferred practice when planting indigenous plants and in particular, when undertaking revegetation or restorative planting. It serves to maintain genetic diversity and increase plant survival because plants are accustomed to their local environment.</li> </ul>		
	<p><b>6.6.3</b> By managing earthworks and vegetation clearance in all areas of the District in order to avoid, remedy or mitigate adverse effects on significant ecological areas, recognising there is complete information on the exact geographic location of all these valued areas may not be available.</p>	<p>RDL has assessed that the site contains some small, scattered habitats of generally low ecological value, and therefore any earthworks or vegetation clearance to take place on site as part of any potential development proposal will not adversely affect significant ecological areas.</p> <p>Any potential adverse effects associated with vegetation clearance and/or earthworks in relation to ecological values can be avoided, minimised or mitigated through best practice sediment and erosion control measures, comprehensive ecological and landscape design principles, as well as appropriate planning and development controls.</p> <p>Each subdivision consent within the Awakino Precinct will require an Ecological and Wetland Assessment which will further assess the ecological values at the time of a subdivision consent application.</p>	
	<p><b>6.6.4</b> By evaluating the significance of areas of indigenous vegetation and habitats of indigenous fauna by reference to the criteria listed in Appendix III of the Northland Regional Policy Statement</p>	<p>No habitats or indigenous vegetation on site or immediate surrounds is considered to meet any of the significance criteria as described under Appendix III of the Northland Regional Policy Statement.</p>	
	<p><b>6.6.5</b> By providing incentives in the Plan which encourage measures to protect and enhance indigenous vegetation and habitats of indigenous species.</p>	<p>Proposed Awakino Precinct Provisions outlines a number of policies and objectives that aim to strike a balance between protecting and enhancing areas of existing or potential ecological values, while</p>	

RELEVANT OBJECTIVES (ECOLOGY)	RELEVANT POLICIES (ECOLOGY)	DISCUSSION
		concentrating the Site's development on areas with low existing ecological values or functionality.
<b>Chapter 12 - Rural</b>		
<p><b>12.5.1</b> To maintain and enable public access to the coast, rivers and lakes as a result of land use and subdivision development.</p> <p><b>12.5.2</b> To maintain the rural character and amenity, including the:</p> <ul style="list-style-type: none"> <li>• Sense of openness;</li> <li>• Low dominance of built form;</li> <li>• Pasture and Commercial Forest Areas;</li> <li>• Areas of indigenous vegetation and significant fauna; and</li> <li>• Unmodified natural landforms</li> </ul> <p><b>12.5.3</b> To protect areas of significant indigenous vegetation and significant habitats of indigenous fauna so as to avoid, remedy or mitigate the decline of indigenous vegetation and fauna.</p> <p><b>12.5.4</b> To ensure that the servicing of new subdivision and development does not adversely affect the environment, in particular sensitive receiving environments.</p> <p><b>12.5.5</b></p>	<p><b>12.6.1</b> Subdivision adjoining the coast, rivers and lakes is generally only acceptable when it provides public access (by the vesting of public access roads, reserves and pedestrian access ways and access strips) and provides Esplanade Reserves and/or Strips.</p> <p><b>12.6.2</b> By encouraging growth in areas identified in Chapter 3, (Dargaville, Maungaturoto, Mangawhai and Kaiwaka).</p> <p><b>12.6.3a</b> By allowing greater intensity of subdivision, or development in the Rural Zone where this is offset by protection, restoration, enhancement or establishment of natural features, vegetation and open space, where they significantly contribute to the natural environment values, natural character of the coastal environment, and rural character and amenity.</p> <p><b>12.6.3c</b> By providing for more intensive and innovative site-specific subdivision and development where this results in better environmental outcomes.</p> <p><b>12.6.5</b> By avoiding, remedying or mitigating the adverse effects of subdivision and development (including ribbon development) on the natural environment values of the rural area.</p>	<p>The subject site does not abound coast, rivers or lakes.</p> <p>It is considered that the proposal is in general accordance with objective and policies under Chapter 12.</p> <p>All natural features (including ephemeral and intermittent streams, 'natural wetlands,' wet seeps, ponds and indigenous vegetation) on site are to be protected and enhanced as part of any subdivision proposal within the proposed Awakino Precinct.</p> <p>The Proposal would at least partly allow to enhance and protect degraded ecological features on site and thus positively contribute to biodiversity enhancement and protection within the site boundaries.</p> <p>It is considered that the proposal will result in the rehabilitation, enhancement and ongoing protection of natural features noted on site, and seeks to improve the overall quality of freshwater and terrestrial values noted on site.</p> <p>Any potential adverse effects associated with the potential site development works in relation to ecological values can be avoided, minimised or mitigated through best practice sediment and erosion control measures, comprehensive ecological and landscape design principles, as well as appropriate planning and development controls.</p>

RELEVANT OBJECTIVES (ECOLOGY)	RELEVANT POLICIES (ECOLOGY)	DISCUSSION
<p>To avoid, remedy or mitigate adverse effects on the quality of the rural environment without unduly restricting productive rural activities e.g. farming and forestry.</p>		
<p><b>12.5.6</b> To provide for a range of activities in the Rural Zone which are located, designed and operated in such a way as to avoid, remedy or mitigate reverse sensitivity effects on existing land uses in the vicinity.</p>	<p><b>12.6.6</b> By promoting the integration of subdivision, use or development with the protection, enhancement or establishment of natural features, vegetation and open space.</p>	<p>It is considered that the proposal promotes an integrated development proposal aimed at preserving and enhancing ecological values of the site, and where required, providing sufficient setbacks between the immediate development footprint encompassing sensitive aquatic and/or terrestrial environments.</p>
<p><b>12.5.7</b> To recognise farming, forestry, mineral extraction and processing, renewable energy generation, industrial and commercial activities and network utilities that enable people and communities to provide for their social, economic and cultural wellbeing.</p>	<p><b>12.6.7</b> By avoiding, remedying or mitigating the adverse effects of activities which pose the greatest threat to remaining areas of significant indigenous vegetation and significant habitats of indigenous fauna ), and rural amenity (e.g. vegetation clearance, excavation and fill, the bulk and location of buildings and structures).</p>	<p>No significant vegetation or flora is present on the subject site.</p>
<p><b>12.5.8</b> To provide for development of land with a range of allotment sizes that is appropriate to the character of the surrounding rural environment.</p> <p><b>12.5.9</b></p>	<p><b>12.6.8</b> By providing assistance and information to rural landowners and residents regarding:</p> <ul style="list-style-type: none"> <li>• Methods to protect and enhance areas of indigenous vegetation, significant habitats of indigenous fauna and ecological corridors;</li> <li>• The levels of service for infrastructure expected in rural areas of the District.</li> </ul>	<p>It is proposed that all natural features to be protected and enhanced as part of any subdivision proposal within Awakino Precinct will contain appropriate signage outlining the ecological values present on site and the overall goals of the habitat enhancement ton site.</p> <p>The signage should describe the existing ecological baseline conditions of the area (including susceptible species presence), the significance of the restoration works carried out on site, overall goals of the habitat enhancement programme and any other information that is deemed of importance to preserve the biodiversity values on site and immediate surrounds.</p>

RELEVANT OBJECTIVES (ECOLOGY)	RELEVANT POLICIES (ECOLOGY)	DISCUSSION
<p>To maintain sites and buildings during development to avoid adverse visual amenity effects.</p> <p><b>12.5.10</b> To encourage innovative development and integrated management of effects between subdivision and land use which results in better environmental outcomes than more conventional or traditional subdivision, use and development.</p>	<p><b>12.6.9</b> By avoiding, remedying, or mitigating adverse effects on the environment by requiring the landowner or developer to provide roading and on-site services for water supply, wastewater disposal or stormwater disposal for sites in the Rural areas, unless the provision of reticulated services is identified as an alternative to on-site systems.</p>	<p>This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&amp;A.</p>
	<p><b>12.6.13</b> By ensuring that where sites are not connected to a public water supply, wastewater disposal or stormwater disposal system, suitable provision can be made on each site for an alternative water supply or method of wastewater disposal or stormwater disposal, which can protect the health and safety of residents and can avoid any significant adverse effects on sensitive receiving environments.</p>	<p>This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&amp;A.</p>
	<p><b>12.6.14</b> By providing flexibility for subdivision and development density, as well as for a range of activities (industrial, commercial and residential etc.) that can be appropriately located in the Rural Zone and meet the environmental conditions appropriate to that Zone.</p>	<p>This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&amp;A.</p>
	<p><b>12.6.20</b> By requiring the establishment of Esplanade Reserves and Strips when land is subdivided into lots less than 4ha.</p>	<p>This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&amp;A.</p>
<p><b>Chapter 13 – Residential</b></p>		
<p><b>13.5.1</b> To maintain and where appropriate enhance the amenity values of the residential environment.</p> <p><b>13.5.2</b> To ensure that the servicing of new subdivision and development does not adversely affect the</p>	<p><b>13.6.1</b> By requiring subdivision and development to avoid adverse effects on the outlook and privacy of adjoining properties, while being compatible with the character and amenity of the surrounding environment.</p>	<p>It is considered that the development is compatible with the overall ecological character of the wider land use.</p>
	<p><b>13.6.4</b> By encouraging, where practicable, the use of integrated catchment management design solutions for stormwater and wastewater infrastructure.</p>	<p>This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&amp;A.</p>
	<p><b>13.6.5</b> Subdivision adjoining the coast, rivers and lakes is generally only acceptable when it maintains or enhances public access (by the</p>	<p>It is understood that public access within the site is to be enhanced as a part of the Proposal.</p>

RELEVANT OBJECTIVES (ECOLOGY)	RELEVANT POLICIES (ECOLOGY)	DISCUSSION
environment, particularly sensitive receiving environments.	vesting of public access roads, reserves and pedestrian access ways and access strips) and esplanade reserves and / or strips.	
<p><b>13.5.3</b> To maintain and enhance public access to the coast, rivers and lakes as a result of land use and subdivision development.</p>	<p><b>13.6.7</b> By requiring subdivision and development to demonstrate how the effects of earthworks and vegetation clearance can be avoided, remedied or mitigated.</p>	<p>It is considered that the objective, policies and rules as described within the proposed Awakino Precinct Provisions provide sufficient detail and guidance for the preservation and enhancement of natural features (aquatic and terrestrial) present on site.</p>
<p><b>13.5.4</b> By managing the effects of those activities which have the potential to adversely affect residential amenity (e.g. building location, earthworks and vegetation clearance).</p>		<p>At the time of land development/subdivision within the Awakino Precinct, a comprehensive Ecological and Wetland Assessment as well Ecological Management Plan will be required to be submitted as part of a Resource Consent application. This will ensure that any potential adverse effects associated with subsequent subdivision/development of the site on ecological values can be avoided, minimised or mitigated through best practice sediment and erosion control measures, comprehensive ecological and landscape design principles, as well as appropriate planning and development controls.</p>
<p><b>13.5.5</b> To enhance linkages (e.g. pedestrian, vehicular, open space) between adjoining residential uses.</p>		<p>Provided that they are implemented successfully during construction and operational phases of the development, adverse effects on the environment are expected to be no more than minor, and the Proposal would, in fact, allow for the enhancement of functional and structural connectivity of the ecological values identified on Site and immediate surrounds.</p>
<p><b>13.5.6</b> To maintain sites and buildings during development to avoid adverse visual amenity effects.</p>		
<p><b>13.5.7</b> To recognise business and economic activity that enables people and communities of the District to provide for their social, economic and cultural wellbeing, while avoiding adverse effects</p>	<p><b>13.6.12</b> By ensuring that where sites are not connected to a public water supply, wastewater disposal or stormwater disposal system, suitable provision can be made on each site for an alternative water supply or method of wastewater disposal or stormwater disposal, which can</p>	<p>This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&amp;A.</p>

RELEVANT OBJECTIVES (ECOLOGY)	RELEVANT POLICIES (ECOLOGY)	DISCUSSION
(including reverse sensitivity effects) on the environment.	protect the health and safety of residents and can avoid any significant adverse effects on sensitive receiving environments.	
	<b>13.6.16</b> By requiring the establishment of esplanade reserves and strips when land is subdivided in the Residential and Business Zones of the District.	This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&A.
	<b>13.6.17</b> By facilitating the provision of public access to existing esplanade reserves and strips in the District which are currently land locked or isolated from other public access areas.	This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&A.

In addition, we have also considered the provisions under Appendix 25B Integrated Development Guidelines and Appendix 25G Assessment of Ecological Significance.

Appendix 25B – Integrated Development Guidelines		
Overview	Requirements	Discussion
Integrated Development subdivision allows for subdivision and development to occur where the location, form and scale of the proposal complement sustainable environmental management and is consistent with the protection of natural character, landscape, amenity, heritage, and cultural values.	(a) Description of the Proposal (v) requirements for vegetation clearance; (vi) stormwater and effluent disposal systems; (ix) how sustainable management is to be achieved including the management objectives, details of what is to happen and where, and how this is to be monitored and reviewed. (x) measures to maintain open space in order to retain coastal and/or rural character; (xi) measures to protect the life-supporting capacity of soils.	It is considered that sufficient detail has been provided within the body of this report as to the ecological baseline and features noted on site.  Appropriate policies, objectives and rules for the protection and enhancement of these features has been provided under the proposed Awakino Precinct Provisions.  The proposal will encourage the development of integrated open space areas facilitating both access and enhancement of ecological values.  The development is to take place over primarily Class 4 and 6 soils which are not considered 'elite' or 'prime' soils within the Kaipara District.
	(b) Existing Site Characteristics (i) a description of the location of the property in relation to its wider geographic context and local setting;	This has been described in detail under Section 3 of this report and other relevant reporting prepared for the PPC proposal.

	<ul style="list-style-type: none"> <li>(ii) topography and geography of the property;</li> <li>(iv) presence of natural hazards (such as flood prone land or land liable to erosion or any fire hazard);</li> <li>(v) the property history including past uses and management and any implications for future management;</li> <li>(vi) soil types and their classification on the NZ Land Inventory worksheets;</li> <li>(viii) areas of indigenous vegetation and habitats of indigenous fauna with identification of any such areas which are significant, with reference to Sites of Ecological Significance identified by the Department of Conservation and criteria contained in Appendix 25G, and any Notable Trees;</li> <li>(x) relevant information regarding adjoining properties;</li> <li>(xi) the location and purpose of any public reserve land in the vicinity of the site;</li> <li>(xii) any known areas in the vicinity which are being actively managed for pest control or protected or enhanced for conservation benefit;</li> </ul>	
	<p>(c) Proposed Integrated Development Measures</p> <ul style="list-style-type: none"> <li>(i) measures to protect, manage and enhance indigenous vegetation and habitats, landscapes and natural features, heritage resources and riparian margins, including appropriate means of controlling dogs, cats, animal pests and the means of controlling pest plants;</li> <li>(iii) measures for the ongoing control and management of stormwater and effluent disposal;</li> <li>(iv) measures to promote and achieve integrated catchment management;</li> <li>(vi) any other measures to internalise adverse effects including measures to avoid reverse sensitivity on existing activities or uses;</li> </ul>	<p>This is fully addressed under the proposed Awakino Precinct Provisions prepared by B&amp;A.</p>
	<p>(d) Draft Integrated Development Management Plan The proposal must include a Draft Integrated Development Management Plan (to be finalised in accordance with the conditions of consent) setting out, the extent relevant to the proposal:</p> <ul style="list-style-type: none"> <li>(i) the objectives of the proposal;</li> </ul>	<p>It is expected that as a part of any 'enhancement' works on site, some pest weed and animal control, and revegetation planting may be required. These are to be addressed at the time of a land use or resource</p>



	<p>(ii) the mechanisms to ensure that the Integrated Development Management Plan applies to and binds future owners;</p> <p>(iii) where restoration planting and/or other natural resource management works are to be undertaken, performance may be secured by a Council bond (a cash bond in favour of Council, refer to Chapter 22; Financial Contributions) on the following basis:</p> <ul style="list-style-type: none"> <li>• bonded work is to be completed within 4 years of the subdivision Section 224(c) certificate issuing;</li> <li>• access to bonding will not be available until one year after planting, where there is evidence to Council's satisfaction of the successful initial implementation of an approved Integrated Development Management Plan;</li> <li>• the Integrated Development Management Plan is to include matters of the following type. Named species appropriate to the location,( i.e. eco-sourced species) size at planting, density (for example 7,000 stems/ha), seed source, weed clearance/release, pest control, fertiliser application and, at Council's discretion, a requirement for irrigation should conditions require;</li> <li>• legally effective post Section 224 certificate arrangements are required which secure the retention of re-planted vegetation; establish responsibility for continued execution of the Integrated Development Management Plan until its objectives (be they tree height, percentage canopy cover or both) and/or term are satisfied (this may require a community owned management structure depending on the number of subsequent owners); and ensure Council access to the land in the event the bond is to be executed. These requirements may necessitate a bond to be complemented by covenants or other legal instruments;</li> <li>• Council retains the discretion not to accept bonding where there is a potentially harsh environment or other factor(s), which present a significant risk in its</li> </ul>	<p>consent application within an Ecological Management Plan.</p>
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	assessment to successful re-establishment or Integrated Development Management Plan implementation. Evidence of the degree of risk should be included in the information required	
<b>Assessment 25G – Assessment of Ecological Significance</b>		
An assessment of the ranking of an ecological feature, assessments of significance and ranking shall be based on the following criteria:	1. Contain critical, endangered, vulnerable, or rare taxa, taxa of indeterminate threatened status (sensu International Union for Conservation of Nature definitions).	No habitat, flora or fauna present on site meet this factor.
	2. Contain indigenous or endemic taxa that are threatened or rare in Northland.	The site does not contain any indigenous taxa that are considered to be rare or threatened in Northland.
	3. Contain the best representative examples in an ecological district of a particular habitat type.	The site does not contain any representative examples of their particular habitat types. All vegetation on site is considered to be of low ecological value due to significant anthropogenic modification.
	4. Have high density of taxa or habitat types for the ecological district.	The site does not contain high density of taxa or habitat types for the ecological district
	5. Form ecological buffers, linkages or corridors to other areas of significant vegetation or significant habitats of indigenous fauna.	No habitat on site is currently considered to form an ecological buffer, linkage or corridor feature to significant habitats or fauna. It is expected that following the ecological enhancement work on site the ecological quality of the existing terrestrial and aquatic values will be improved.
	6. Contain habitat types that are rare in the ecological district.	The site does not contain any habitats that are rare in ecological district.
	7. Support good populations of taxa which are endemic to the Northland or Northland-Auckland regions.	The site does not support good populations of taxa which are endemic to Northland or Northland-Auckland Regions.
	8. Are important for indigenous or endemic migratory taxa.	The site is not considered to be important for indigenous or endemic migratory taxa.
	9. Support viable populations of species, which are typical of that habitat type within an ecological district and retain a high degree of naturalness.	The site does not support any viable species which are typical of their habitat type, nor contains a high degree of naturalness.

## 7.4 Proposed Regional Plan for Northland March 2022 - Appeals Version

Proposed Regional Plan for Northland (Appeals Version March 2022) applies to air, water and coastal resources in the whole of the Northland region. In relation to the Proposal the rules and regulations that are most applicable to the site are likely to include provisions relating to placing structures within watercourses and works nearby 'natural wetland' areas. Should subsequent site development works not meet the permitted activity standards as per the PRPN provisions consents may be required.

It is possible that any vegetation clearance works (if they are to take place) may require regional consent, this should be assessed at the time of a subdivision application within the Precinct.

## 7.5 Kaipara Spatial Plan

The Kaipara Spatial Plan provides a strategic direction for Kaipara to develop into. The Spatial Plan in relation to Dargaville has identified the extent of the subject site to be within a potential area suitable for residential growth.

In respect to ecological matters the Spatial Plan for Dargaville specifically envisions

- working with existing landowners to instigate riparian planting alongside rivers/streams in rural and new urban areas and work with them to help create shared access in and around Dargaville.
- identify, establish and protect green and blue networks as part of new developments to protect waterways, create ecological connections and stabilize steep and erodible slopes
- maintain and enhance areas of existing native vegetation to provide habitat corridors that link ecological areas and create biodiversity corridors
- protect productive soils from urban and industrial expansion

This is recognised and provided for in the Proposal which will protect and enhance the existing natural and semi-natural aquatic habitats on site (including 'natural wetlands,' ephemeral and intermittent streams, wet seeps and ponds) on site in perpetuity, and thus maintain and improve the overall ecological functionality of the site and maintain habitat corridor connections to the immediate surrounds.

In respect to preserving productive soils from industrial and urban expansion. According to data accessed from NZLRI, the Kaipara District contains no highly productive elite land (LUC Class 1) with approximately 10% of the district being classified as prime land (LUC Classes 2 and 3), extending primarily along the floodplains of the Wairoa River. The priority for LUC Classes 1-3 is to maintain the potential for these high-quality soils to be used for agricultural purposes, rather than activities that are not dependent on soil quality. The majority of the subject site and immediate surrounds under the Land Use Classification (LUC) system is classed as LUC Class 4 which has severe physical limitations to arable use. These limitations substantially reduce the range of crops which can be grown, and/or make intensive soil conservation and management necessary. Therefore, we consider that the Proposal will not result in the 'loss' of productive soils.

## 8.0 CONCLUSION

A Private Plan Change (PPC) is proposed for the subject site resulting in the creation of Awakino Precinct that would enable medium density residential development for a range of allotment sizes where ecological enhancement, open space and connectivity corridors are achieved.

This report provides a general overview of the baseline ecological values of the site, and outlines ecological opportunities, constraints and potential mitigation strategies associated with the Proposal.

The site is dominated by exotic pasture with only some small, scattered pockets of indigenous vegetation (primarily dominated by regenerating kanuka and a sliver of towai treeland) dotted along primarily the sites eastern extent. A number of watercourses (both natural and artificial in origin), and some scattered wetland, wet seep and pond areas were recorded on site. No 'At Risk' or 'Threatened' flora and fauna were recorded on site during site survey visits or desktop analysis of previous species records within the wider area. The site is considered a highly modified environment supporting little indigenous vegetation and no permanent streams.

The review of existing information and site visit undertaken on the 18<sup>th</sup> of March 2022 found no significant ecological values within the proposed plan change area. Therefore, RDL considers that the overall existing ecological values of the site are low and associated with the long history of indigenous vegetation clearance on site along with modification to aquatic habitats and the sites general agricultural use and associated effects on natural habitats and species.

As a part of the ecological assessment, RDL briefly considered potential ecological effects on terrestrial and aquatic values attributable to the Proposal and subsequent subdivision and development of the site, before and after the implementation of recommended mitigation and management actions. The subsequent level of ecological effects (with mitigation measures) is considered to be low in accordance with the EINAZ (2018). It should be noted that at the time of any proposed land development subdivision application, a site specific Ecological and Wetland Assessment along with an Ecological Management Plan shall be prepared to ensure that the potential effects, as well as enhancement and mitigation strategies can be assessed based on site specific design detail.

The proposed Awakino Precinct Provisions prepared by B&A, where they relate to protection and enhancement of ecological features on site, provide detailed guidance as to how ecological effects following the PPC associated with land subdivision/development can be sufficiently avoided, reduced or mitigated, and would in fact allow for the enhancement and permanent protection of these features.

The Proposal is generally consistent with the policies and objectives relating to ecological protection and enhancement as outlined under NPSFM, Kaipara District Plan (Operative), Proposed Regional Plan for Northland (Appeals Version) and Kaipara Spatial Plan.

Therefore, it is considered that there are no significant constraints to the proposed urbanisation of the subject site, and the potential adverse effects on the environment can be avoided, remedied or mitigated through following the policies, objective and rules as outlined within the proposed Awakino Precinct Provisions or the existing relevant provisions of the District and Regional Plans. The Proposal and associated Awakino Precinct Provisions would provide the opportunity to protect and enhance the current low ecological values with a particular focus placed on maintaining the interconnected network between the natural features.

**Report Prepared by:**

Madara Vilde  
Senior Ecologist  
BSc (Hons) Environmental Protection – Maj Forestry and Hydrology  
Rural Design 1984 Ltd

Jack Warden  
Senior Ecologist  
BAppSci – Maj Biodiversity Management  
Rural Design 1984 Ltd

Christine Evans  
Ecologist  
PhD, BSc (Hons) – Maj Behavioural Ecology  
Rural Design 1984 Ltd

Kyle Sutherland  
Ecologist  
MSc, BSc (Hons) – Maj Ecology and Conservation  
Rural Design 1984 Ltd

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# Appendix 1 – Terrestrial and aquatic habitats within the proposed Awakino Precinct

