APPENDIX G

Wildlands ecological assessment report

ECOLOGICAL ASSESSMENT OF A PROPOSED FOUR LOT SUBDIVISION AT WAINUIOTOTO FARM, WHANGAPOUA

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ECOLOGICAL ASSESSMENT OF A PROPOSED FOUR LOT SUBDIVISION AT WAINUIOTOTO FARM, WHANGAPOUA

Contract Report No. 3160a

September 2014

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1. INTRODUCTION

Ross and Dee Mear, in conjunction with other parties, own Wainuiototo Farm (*c*.62.79 ha), near Whangapoua, on the Coromandel Peninsula (see Figure 1 for location). Currently the property comprises pasture on rolling hill country, indigenous coastal forest, regenerating scrub and shrubland, and exotic gorse scrub. A steep forest-clad escarpment adjoins the coast and much of a small stream catchment has a cover of indigenous forest.

The owners wish to apply for a resource consent to subdivide the property into four lots of about 15 hectares, with a total of up to four house sites (Figure 1), with one on each lot.

A separate assessment of landscape and visual effects has been prepared.

This report provides descriptions of the vegetation and habitats on the property, species records for terrestrial and aquatic habitats, and an assessment of ecological effects associated with the proposed development. A selection of site photographs is provided, along with the lists of plants and fauna recorded on the property. Various suggestions are provided for measures to avoid, minimise, or mitigate for potential adverse effects. The property is to be retired from farming use and most is to be managed for indigenous revegetation purposes. A comprehensive suite of ecological management provisions has been developed and are described in this report.

2. METHODS

A literature search was undertaken, to identify relevant existing ecological and other technical information.

Field surveys of the property were undertaken in June, July, and December 2013 and April, May, and July 2014. This included walk-through surveys of the vegetation and habitats present. Vegetation and habitats were described and mapped onto aerial photographs, at a scale of 1:3,000.

Representative photographs were taken on-site (Appendix 1) and a list of vascular plants was compiled Appendix 2).

All bird species seen and heard during site visits were recorded.

Each potential house site was assessed, and proposed accessways to each site.

Potential ecological effects were assessed and an ecological management plan was developed.

3. ECOLOGICAL CONTEXT

The property within the coastal bioclimatic zone, in the Colville Ecological District[1], which encompasses the northern half of Coromandel Peninsula. It mainly comprises broken, steep fault block country with both cuspate and drowned deeply embayed coastlines, with most areas lying below 600 m asl (McEwen 1987).

Coastal and semi-coastal vegetation in the Colville Ecological District is restricted to relatively small remnants, freshwater wetlands have also been greatly reduced in extent. Many dune systems have been destroyed or modified by urban development and plantation forestry, and those which remain are affected to varying degrees by adventive plants, pest animals, recreational impacts, and, in some cases, by stock grazing. Lowland forest occurs extensively along the spine of the Coromandel Peninsula, but it has been greatly modified by logging and fires (Wildland Consultants 2012).

Prior to the arrival of humans, coastal hills would have been covered in pōhutukawa (*Metrosideros excelsa*) forest and coastal forest and scrub including species such as pūriri (*Vitex lucens*), taraire (*Beilschmiedia tarairi*), kohekohe (*Dysoxylum spectabile*), and ngaio (*Myoporum laetum*). Semi-coastal forest was dominated by tawa (*Beilschmiedia tawa*), tōwai (*Weinmannia silvicola*), and podocarps such as rimu (*Dacrydium cupressinum*), totara (*Podocarpus totara*), and tānekaha (*Phyllocladus trichomanoides*) with frequent kauri (*Agathis australis*) and northern rata (*Metrosideros robusta*). Wetlands adjacent to estuaries and tidal waterways would have supported a gradient from saltwater wetlands to freshwater wetlands of sedges, rushes, harakeke (flax, *Phormium tenax*), raupō (*Typha orientalis*), tī kouka (cabbage tree, *Cordyline australis*), mānuka (*Leptospermum scoparium*), kahikatea (*Dacrycarpus dacrydioides*), and maire tawake (swamp maire; *Syzygium maire*) (Wildland Consultants 2012).

Large tracts of indigenous forest within Colville Ecological District provide good habitat for avifauna including some that are considered to be Threatened[2]. Bird species of note include: pāteke (brown teal; *Anas chlorotis*; At Risk-Recovering), North Island brown kiwi (*Apteryx mantelli*; Threatened-Nationally Vulnerable), New Zealand falcon (*Falco novaeseelandiae* "bush"; Threatened-Nationally Vulnerable) and kākā (*Nestor meridionalis septentrionalis*; Threatened-Nationally Vulnerable). North Island robin (*Petroica longipes*) were released in the Ecological District in early 2009 (Kessels Associates 2010).

Coastal estuarine, sand dunes and beaches within the Colville Ecological District provide habitat for waders and shorebirds, including northern New Zealand dotterel (*Charadrius obscurus aquilonius*; Threatened-Nationally Vulnerable), banded dotterel (*Charadrius bicinctus bicinctus*, Threatened-Nationally Vulnerable), reef heron

[1] Ecological Districts have been defined by distinctive combinations of topography, geology, climate, soils, vegetation, fauna, and human-induced modification (McEwen 1987).

[2] Avifauna have been ranked by Robertson *et al*. (2013).

Data Acknowledgment

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Figure 1. Wainuiototo Farm, Whangapoua

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(*Egretta sacra sacra*; Threatened-Nationally Endangered), Caspian tern (*Hydroprogne caspia*; Threatened-Nationally Vulnerable), pied stilt (*Himantopus himantopus leucocephalus*; At Risk-Declining) and pied shag (*Phalacrocorax varius varius*; Threatened-Nationally Vulnerable). Northern blue penguins (*Eudyptula minor iredalei*; At Risk-Declining) utilise coastline habitat.

Wetlands in Colville Ecological District provide habitat for the North Island fernbird (*Bowdleria punctata vealeae*; At Risk-Declining), spotless crake (*Porzana tabuensis tabuensis*; At Risk-Relict), Australasian bittern (*Botaurus poiciloptilus*; Threatened-Nationally Endangered), and grey duck (*Anas superciliosa superciliosa*; Threatened-Nationally Critical) (Kessels Associates 2010).

3.1 Landforms and catchments

Wainuiototo Farm comprises moderately steep coastal cliff faces, and undulating, rolling and strongly rolling hills. Dry stock grazing occurs on undulating hillslopes.

A good quality first order unnamed stream runs through a gully system from predominantly indigenous vegetation in the hinterland eastwards to cross the beach at the northern end of the property. The stream divides into two approximately 1 km from the mouth, in hill country outside of the property, at about 50 m above sea level. Each tributary has a catchment area of less than 70 km^2 and an annual low flow of between 3-4 L/s[1]. Currently most of this stream catchment comprises indigenous vegetation with a small area near the stream mouth which is grazed. The stream, near the coast, has a sandy bottom with scattered boulders and cobble stones with shallow pools and riffles where the water flows over rocks.

Parts of the property also drain directly to the coast at New Chums Beach, or the short section of coast between Motuto Point and the mouth of the Pungapunga River.

3.2 Threatened land environments

The Threatened Environment Classification (Walker *et al*. 2007) is based on analysis of three databases: Land Environments of New Zealand, Landcover (Version 2), and the Protected Natural Area network. These have been overlain to determine what land types lack formal protection and have lost indigenous vegetation cover and, therefore, indigenous habitat. There are five categories of threatened environments[2] and the entire property is classified as 'Underprotected'.

Land classified as 'Underprotected' includes indigenous habitats that are more likely to have legal protection as 10-20% of the area identified as 'Underprotected' nationally is legally protected) and may be under conservation management. However indigenous biodiversity will still be under threat from weeds, pest animals, and clearance.

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1 Freshwater fish data base (NIWA: https://nzffdms.niwa.co.nz/search) accessed April 2014.

2 Five categories listed in diminishing order of threat classification: Acutely Threatened (<10% indigenous cover remains), Chronically Threatened (10-20% indigenous cover remains), At Risk (20-30% indigenous cover remains), Critically Underprotected (>30% indigenous cover remaining, <10% protected), Underprotected (>30% indigenous cover remains, 10-20% protected), and Better Protected (>30% indigenous cover remains, >20% protected).

3.3 Naturally uncommon ecosystems

New Zealand's naturally uncommon ecosystems (Holdaway and Wiser 2012) are environments that provide habitat for threatened species and represent areas of high biodiversity value. Since human settlement many of these ecosystems have been reduced in area and function and are recognised as being high priority for conservation protection. Using the International Union for Conservation of Nature (IUCN) Ecosystem Red List, New Zealand's naturally uncommon ecosystems have been prioritised in order of the most threatened. Eighteen naturally uncommon ecosystems are classified as Critically Endangered, 17 are classified as Endangered, and 10 as Vulnerable. Active sand dunes and stable sand dunes, - such as those that occur on New Chums Beach - are classified as 'Endangered' (Holdaway and Wiser 2012).

3.4 Significant natural areas

Five Significant Natural Areas (SNA) have been identified within or adjacent to the subject property and are summarised below (Kessels Associates 2010; see Figure 2).

<u>Hapapawera (TC120)</u>

This large (657.3 ha) significant natural area comprises a sequence of indigenous habitats from the coast inland to tall forest. Most of this SNA is in private ownership (562.7 ha) and a smaller proportion is Department of Conservation-administered land (94.6 ha). It is bounded by sea to north (the southern end of Kennedy Bay), Ngā Whenua Rāhui, and plantation pine forest. Dunelands, coastal and lowland forest (with pōhutukawa-kōwhai-pūriri and tawa-kohekohe combinations) and scrublands (of kauri-tānekaha) associations are also present.

<u>New Chums Recreational Reserve (TC120a)</u>

A relatively small area (5.1 ha) north of the property comprises coastal cliffs and duneland habitats. It is largely (4.8 ha) Department of Conservation-administered land.

<u>Wainuiototo (New Chums) Beach (TC121)</u>

This site includes sandfield habitat (1.1 ha) above mean high water spring (MHWS). New Zealand dotterel (*Charadrius obscurus*) utilise this site.

<u>New Chums Forest (TC132)</u>

This SNA covers an area of *c*.50.8 ha, comprising an ecological sequence from dunelands, inland to pōhutukawa (*Metrosideros excelsa*)-dominant coastal forest and kānuka (*Kunzea ericoides*) and mānuka (*Leptospermum scoparium*) scrublands. It is mostly private property (50.0 ha), but also includes a Local Purpose Reserve (0.5 ha) and Department of Conservation-administered land (<0.5 ha).

Thames Coromandel District Council Recreational Reserve to New Chums (TC137)

This small (2.7 ha) coastal forest comprises pōhutukawa forest on cliff faces with kauri-tawa-broadleaved associations in a southern gully. The area is entirely protected as a Thames Coromandel District Council Reserve (2.7 ha) and Department of Conservation-administered land (<0.5 ha).

New Chums Recreational Reserve (TC137a)

This small (1.7 ha) site includes coastal pōhutukawa forest and is entirely privately-owned, with the majority protected under a QEII Open Space Covenant.

New Chums Recreational Reserve (TC137b)

This small (1.2 ha) site includes coastal pōhutukawa forest and is entirely Department of Conservation-administered land.

4. SITE HISTORY

The property has a long history of vegetation clearance and grazing, and it is evident that the existing broad pattern of vegetation cover has been in place for many decades. Historical aerial photographs of the area were obtained from Waikato Regional Council for the periods 1944-45, 1970-73, and 1983-84 (Plates 1-3 respectively) and show that most of the property was pasture in the 1940s and that the general pattern of indigenous vegetation cover was similar to the current situation.

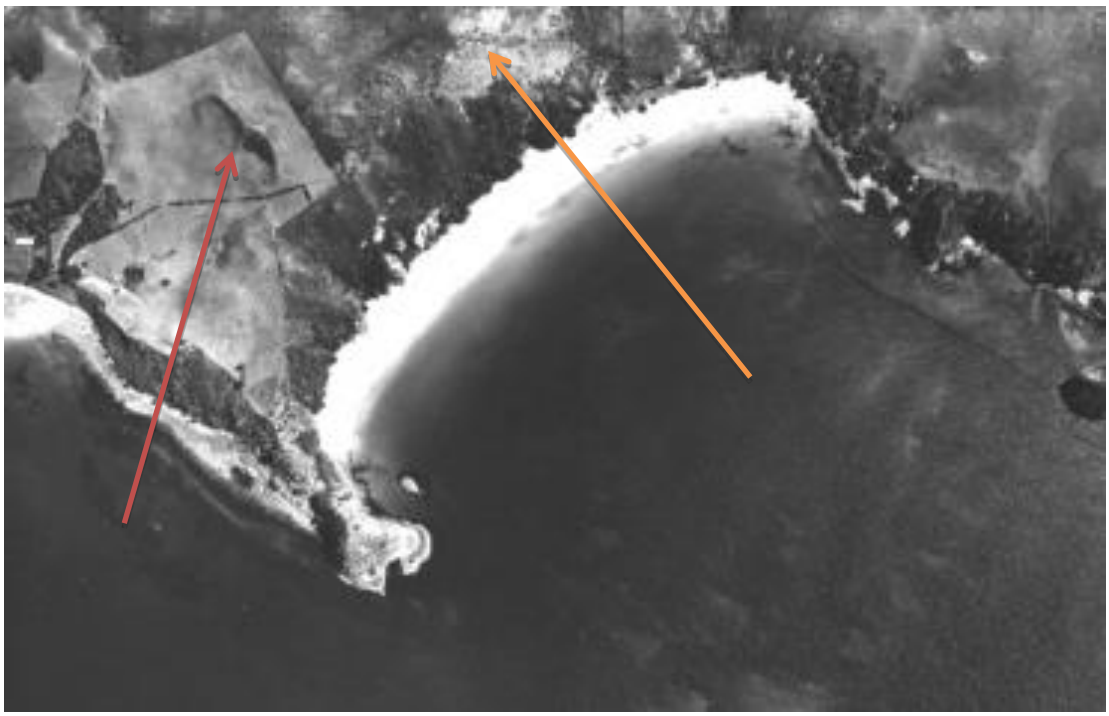

Plate 1: Historical aerial photograph (1944-1945) of the Wainuiototo Farm area. The orange arrow indicates the area that currently comprises kānuka forest and scrub. The red arrow indicates pasture that comprises gorse scrub in 2014.

Plate 2: Aerial photograph 1970-1973 of the Wainuiototo Farm area. The orange arrow indicates the area that currently comprises kānuka forest and scrub. The red arrow indicates pasture that comprises gorse scrub in 2014.

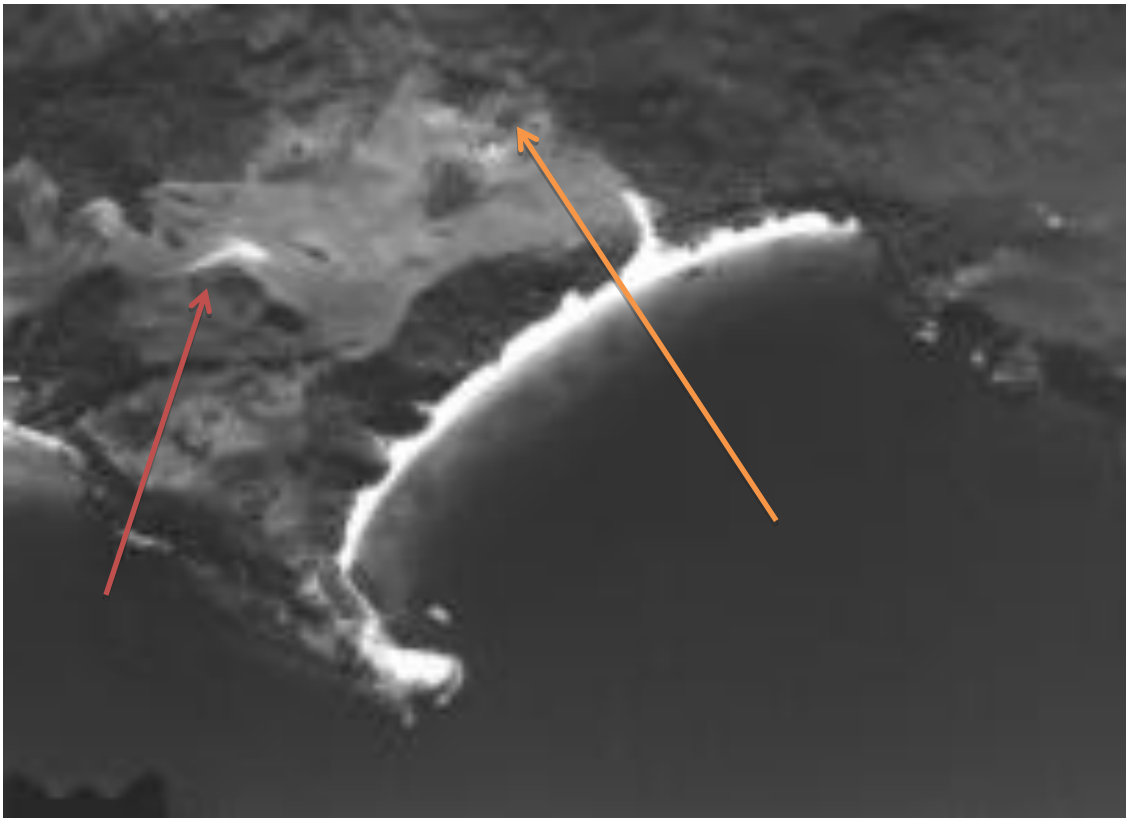

Plate 3: Aerial photograph 1983-1984 of the Wainuiototo Farm area. The orange arrow indicates the area that currently comprises kānuka forest and scrub. The red arrow indicates pasture that comprises gorse scrub in 2014.

5. STATUTORY CONTEXT

The following statutory documents are relevant to the site:

- New Zealand Coastal Policy Statement (NZCPS).
- Waikato Regional Policy Statement - Operative and Proposed.
- Waikato Regional Plan.
- Thames-Coromandel District Plan - Operative and Proposed.

In the Operative District Plan the property is within the Whangapoua Planning Area and is zoned as Coastal.

In the Proposed District Plan the property is zoned as Rural.

Key overlays from the Proposed District Plan are shown in Figure 2:

- Outstanding natural character; and
- Outstanding landscape.

The outstanding natural character overlay includes all indigenous forest on the property, including the coastal escarpment, forest in the catchment of the small stream at the northern end of the property, and forest in the south-western corner.

The outstanding landscape overlay includes all of the indigenous forest on the coastal escarpment.

Relevant provisions in the New Zealand Coastal Policy Statement, Waikato Regional Policy Statement, Waikato Regional Plan, Operative and the Proposed District Plans are set out in Appendix 3.

6. VEGETATION AND HABITATS

6.1 Overview

The property is currently operated as part of a larger dry stock farm. Indigenous forest on the coastal escarpment is currently fenced to exclude stock, along with the block of indigenous in the northern part of the property. The forested escarpment has a limited network of low impact walking tracks, used for general access and for weed and pest animal control. The latter block of forest is bisected by a network of vehicle access tracks, with access via a concrete ford across the stream.

The balance of the property is pasture and/or regenerating gorse, with an associated network of existing vehicle tracks.

Fourteen vegetation and habitat types have been identified:

- Coastal scarp - adjacent to Wainuiototo Bay
- Kauri/kānuka-(pūriri)-(rewarewa)-(tānekaha) forest

- Kānuka forest
- Radiata pine forest
- Rewarewa-tānekaha/kānuka forest and scrub
- Kānuka scrub
- Kānuka treeland
- Gorse scrub
- (Pōhutukawa)/gorse-pampas-Ficinia nodosa-buffalo grass shrubland
- Gorse-woolly nightshade-buffalo grass-kikuyu shrubland
- Gorse/pasture grass shrubland and grassland
- Pasture
- Spinifex sandfield
- Tracks

These types are mapped in Figure 3 and are described below.

6.2 Vegetation and habitat type descriptions

1. Coastal scarp - adjacent to Wainuiototo Bay

The following types were present on the scarp **(*c*.12.13 ha)**: These types are described below but are not mapped separately in Figure 2.

- Pōhutukawa forest (a)
- Pōhutukawa forest (b)
- Pōhutukawa-karaka forest
- Pōhutukawa-nikau-taraire forest
- Kānuka forest
- Kānuka/mingimingi (*Leucopogon fasciculatus*)-*Coprosma macrocarpa*-māpou shrubland
- Māpou-māhoe-mānuka-*Coprosma macrocarpa* shrubland
- Mānuka-hangehange-*Coprosma macrocarpa* shrubland
- Cliffs above beach

<u>Pōhutukawa forest (a)</u>

Pōhutukawa is dominant, with a subcanopy of nikau (*Rhopalostylis sapida*), kohekohe, and houpara (*Pseudopanax lessonii*). The shrub tier comprises hangehange (*Geniostoma ligustrifolium*), whararangi, houpara, kawakawa (*Macropiper excelsum*), nikau, and *Gahnia lacera*. The groundcover comprises nikau, *Doodia australis*, *Carex*, māpou (*Myrsine australis*), *Adiantum cunninghamii*, and local scattered arum lily (*Zantedeschia aethiopica*).

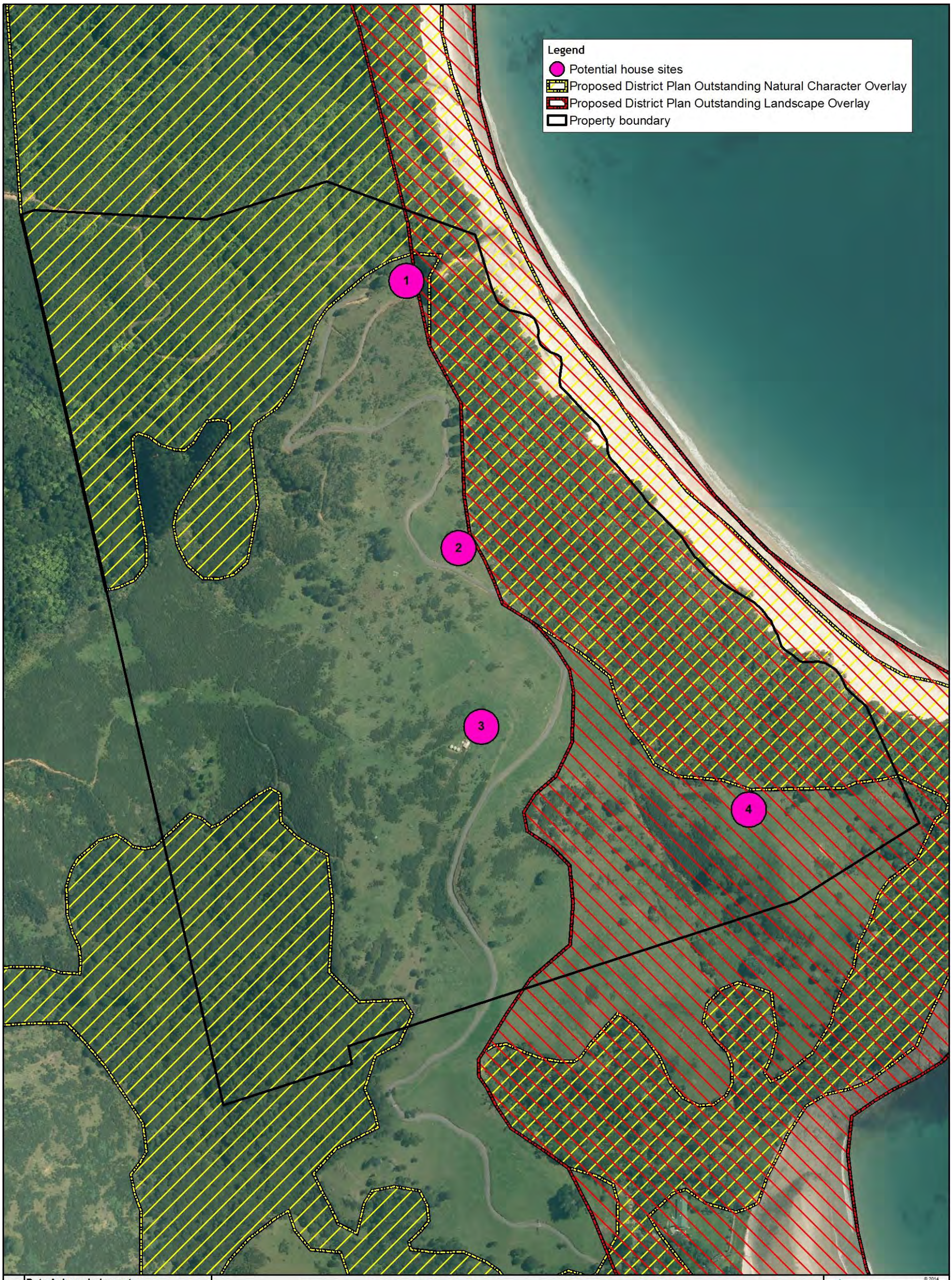

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Figure 2. District Plan Overlays relevant to ecological values at Wainuiototo Farm, Whangapoua

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Figure 3. Vegetation and Habitat Types at Wainuiototo Farm, Whangapoua

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Pōhutukawa forest (b)

Pōhutukawa forms the canopy, with an understorey dominated by ponga (silver fern, *Cyathea medullaris*), hangehange, pigeonwood (*Hedycarya arborea*), and *Coprosma macropcarpa.* The pōhutukawa are often festooned with epiphytes, including *Collospermum hastatum* and *Astelia banksii*.

Pōhutukawa-karaka forest

Pōhutukawa are dominant in association with karaka (*Corynocarpus laevigatus*) and local kohekohe, tawa, taraire, and hīnau (*Elaeocarpus dentata*). Nikau is common throughout.

Pōhutukawa-nikau-taraire forest

On a low terrace behind the foredune there is an area of tall forest comprising tall pōhutukawa and nikau, with local taraire, karaka, and houpara. The understorey has locally dense nikau. Other species present include kawakawa, hangehange, kohekohe, and māpou. Groundcover is variable but includes *Blechnum filiforme*, *Doodia australis*, nikau seedlings, *Gahnia lacera*, *Carex testacea*, and *Coprosma rhamnoides*. One woolly nightshade (*Solanum mauritianum*) was recorded, along with arum lily and local onion weed (*Allium triquetrum*).

Kānuka forest

Kānuka is dominant, with scattered tānekaha. The understorey is often dense, and includes ponga, *Gahnia lacera*, hangehange, *Olearia furfuracea*, and *Coprosma rhamnoides*. The groundcover is variable, often including seedlings of the above. In places it is mainly leaf litter, with local *Doodia australis*.

Kānuka/mingimingi (*Leucopogon fasciculatus*)-*Coprosma macrocarpa*-māpou shrubland

A diverse vegetation association. Scattered emergent kānuka are prominent, as are local small stands of kānuka. Other local emergent trees include tānekaha and one or two totara. Other canopy components include nikau, mānuka, māhoe (*Melicytus ramiflorus*), rangiora (*Brachyglottis repanda*), ponga, *Gahnia lacera*, prickly mingimingi (*Leptecophylla juniperina* subsp. *juniperina*), and *Olearia furfuracea*. The shrub tier includes *Coprosma rhamnoides* and hangehange, and shrubs of the above species. *Parsonsia heterophylla* scrambles over the trees.

Māpou-māhoe-mānuka-*Coprosma macrocarpa* shrubland

Māpou, māhoe, mānuka, and *Coprosma macrocarpa* are common, with local *Pittosporum huttonianum*, tānekaha, kauri rickers, pōhutukawa, and kowhai.

Mānuka-hangehange-*Coprosma macrocarpa* shrubland

Mānuka, hangehange, and *Coprosma macrocarpa* are common canopy components, in association with mingimingi, koromiko (*Hebe stricta* var. *stricta*), *Gahnia lacera*, ponga, pōhutukawa shrubs, māhoe, woolly nightshade (one plant seen in this type), and gorse (*Ulex europaeus*). Groundcover comprises *Microlaena stipoides*, seedlings of above, māpou, Australian sedge (*Carex longebrachiata*), *Coprosma rhamnoides*, *Oplismenus hirtellus* subsp. *imbecillis*, *Carex divulsa*, and gorse, with local arum lily and *Doodia australis*. There are a few *Lepidosperma laterale*.

Cliffs above beach

The steep cliffs adjacent to the beach are mainly unvegetated. Species present include rengarenga (*Arthropodium cirratum*), akeake (*Dodonea viscosa*), harakeke (flax, *Phormium tenax*), gorse, *Hebe stricta* var. *macroura*, *Astelia banksii*, *Lachnagrostis billardierei,* pōhutukawa, native iceplant (*Disphyma australe* subsp. *australe*), pampas (*Cortaderia selloana*), karo (*Pittosporum crassifolium*), paspalum (*Paspalum dilatatum*), and ratstail (*Sporobolus africanus*). Gladioli (*Gladiolus undulatus*) occurs locally.

2. Kauri/kānuka-(pūriri)-(rewarewa)-(tānekaha) forest

Tall (<20 m) forest in the south-western corner forest (5.60 ha) of the study area include kauri emergent above kānuka forest. Pūriri, rewarewa (*Knightia excelsa*), miro (*Prumnopitys ferruginea*) and tānekaha are in the canopy and occasionally emergent from the kānuka. Nikau, karaka, ponga, māhoe, kohekohe, kareao (supplejack, *Ripogonum scandens*), hangehange, and māpou are all common underneath the canopy. Rimu is also present. Although fenced it appears that stock have access to this area as the groundcover and shrub tiers are depauperate of species. The aforementioned species and mingimingi, *Coprosma rhamnoides*, pigeonwood, *Oplismenus hirtellus* subsp. *imbecillis* and *Doodia australis* are scattered throughout the ponga fronds, leaf litter and bare ground.

3. Kānuka forest

Stands of tall kānuka (*c*.1.51 ha) occur adjacent to a radiata pine stand, gorse scrub and pasture areas. Woolley nightshade, gorse, mānuka, mamaku, rewarewa and ponga are locally common in this type.

4. Radiata pine forest

There are two radiata stands in the study area. One stand (*c*.0.75 ha) occurs on the northwestern side of the study area, on a north facing gully slope. Pampas, kānuka and gorse occur on the margins.

There is also a small planted stand of *c*.35 tall radiata pine up to 25 m tall near the beach front. The groundcover comprises pine needles, kikuyu (*Cenchrus clandestinum*), and buffalo grass (*Stenotaphrum secundatum*), with local arum

lily. A few scattered woody seedlings are present, including māpou and houpara.

5. Rewarewa-tānekaha/kānuka forest and scrub

Rewarewa and tānekaha are common emergents over forest and scrub dominated by tall kānuka (*c*.5.01 ha). Ponga, mamaku, pūriri, kauri, rimu, totara and pōhutukawa are also in the canopy. Pampas occurs in canopy gaps.

Mānuka, karamū, *Lepidosperma laterale*, *Machaerina sinclairii*, mingimingi, ponga, pampas, gorse, kūmarahou, rangiora, hanghange, *Schoenus tendo*, *Gahnia lacera*, prickly mingimingi, *Coprosma lucida*, tūrutu (*Dianella nigra*) akepiro, pigeonwood, kiokio (*Blechnum novae-zelandiae*), patē (*Schefflera digitata*) and māpou are locally common in the understorey. Maritime pine (*Pinus pinaster*) and radiata pine wildings occur at the south western end of this type.

The margins are grazed where adjacent to pasture.

At the northern end of the study area a vehicle access track cuts through this type.

6. Kānuka scrub

Kānuka scrub (*c*.3.74 ha) up to *c*.6 m tall occurs on the north-western margin of the study area. This regenerating scrub has a dense understorey which comprises mānuka, *Lepidosperma laterale*, *Machaerina sinclairii*, prickly hakea (*Hakea sericea*), mingimingi, karamu, ponga, pampas, gorse, kūmarahou (*Pomaderris kumeraho*), rangiora, hangehange, *Schoenus tendo*, *Gahnia lacera*, prickly mingimingi, *Coprosma lucida*, and māpou. Small trees including rewarewa, tānekaha, rimu, māhoe and kauri rickers occur throughout.

Kānuka trees increase in height and the understorey becomes more variable as this vegetation type graduates into the kānuka forest lower down the hillslope.

7. Kānuka treeland

Small tall remnant stands of kānuka (*c*.1.18 ha) remain throughout the grazed pasture. Pasture is dominated by kikuyu grass, with paspalum, ratstail, browntop (*Agrostis capillaris*), buffalo grass, sweat vernal (*Anthoxanthum odoratum*) and scattered plants of narrow-leaved plantain (*Plantago lanceolatum*), *Ficinia nodosa*, Australian sedge, ragwort (*Jacobaea vulgaris*) and white clover (*Trifolium repens*). Gorse and woolly nightshade are present in the shrub tier of some of the kānuka stands. Australian sedge is locally common, in patches.

8. Gorse scrub

A large part of the western side of the project area (*c*.7.13 ha) includes a near monoculture of gorse-dominant scrub. Small patches or single plants of woolly nightshade, pampas and kānuka are present. One tall (*c*.15 m) maritime pine is emergent above the scrub canopy.

8a: On the foreshore gorse is dominant with scattered *Ficinia nodosa* and buffalo grass throughout. There are a few pampas, one wilding pine, one pōhutukawa shrub, and local *Calystegia soldanella*.

9. (Pōhutukawa)/gorse-pampas-Ficinia nodosa-buffalo grass shrubland

Gorse, pampas, *Ficinia nodosa*, and buffalo grass form a dense cover with a few emergent pōhutukawa (*c*.0.17 ha). Kikuyu occurs locally. Saltwater paspalum (*Paspalum vaginatum*) occurs alongside the stream and along a small seepage.

10. Gorse-woolly nightshade-buffalo grass-kikuyu shrubland

The vegetation in this area is variable, including several different features in a small area (*c*.0.09 ha). Gorse is locally dominant, with scattered woolly nightshade and planted pōhutukawa shrubs. Harakeke has been planted alongside a channel. Kikuyu and buffalo grass are locally dominant. *Ficinia nodosa* and periwinkle (*Vinca major*) occur locally, as does arum lily. There is one cabbage tree present.

11. Gorse/pasture grass shrubland and grassland

Gorse bushes are slowly encroaching throughout areas that have until recently been grazed (*c*.11.06 ha). Woolly nightshade, Scotch thistle (*Cirsium vulgare*), and kānuka are scattered amongst the gorse. An occasional maritime pine is emergent from the pasture and gorse.

Rocks are scattered throughout this vegetation type.

12. Pasture

A large proportion of the study area comprises pasture (*c*.13.06 ha). However gorse occurs throughout and kānuka and specimen pōhutukawa trees are also present. Pasture is dominated by kikuyu grass, with paspalum, ratstail, browntop, buffalo grass, sweet vernal, and scattered plants of narrow-leaved plantain, *Ficinia nodosa*, ragwort and white clover. Silky cudweed (*Gamochaeta calviceps*), creeping buttercup (*Ranunculus repens*) and oxalis (*Oxalis corniculata*) are present where the pasture has been recently grazed. Woolly nightshade occurs occasionally. Australian sedge is locally common.

13. Spinifex sandfield

Spinifex (*Spinifex sericeus*) is dominant, with scattered pīngao (*Ficinia spiralis*), covering *c*.0.21 ha. Sea rocket (*Cakile maritima*) occurs locally at the base of the foredune. Gladioli is scattered at the western end. There is also scattered catsear (*Hypochaeris radicata*) and harestail (*Lagurus ovatus*), and local *Calystegia soldanella*.

14. Vehicle tracks

Vehicle tracks on the property **(*c*. 1.14 ha)** have been constructed using basic small-scale cut and fill with surfacing of roading metal.

Plant species that occur on the main access track through the grazed pasture include scattered exotic grasses, broadleaved fleabane (*Conzya sumatrenis*), catsear, hawksbeard (*Crepis capillaris*), silky cudweed (*Gamochaeta calviceps*) and sheep's burnet (*Sanguisorba minor*).

A vehicle access track at the northern end of the subject area has common pampas and gorse throughout. Paspalum, verbena (*Verbena bonariensis*), kikuyu, ring fern (*Paesia scaberula*) and track juncus (*Juncus tenuis*) are also common species.

<u>Unnamed Stream</u>

An unnamed stream flows from the hill country at the northern end of the property, and from adjacent land, and then through the property to empty into the sea at the northern most point where the property meets the coast.

Most of the stream catchment is within indigenous rewarewa-tānekaha/kānuka forest and scrub (Vegetation Type 5). Adjacent to the ford, approximately 180 m from the coast, the riparian margins, on the southern side only, predominantly comprise pasture grass with scattered kānuka, woolly nightshade, gorse, whekī, māhoe and tall pōhutukawa overhanging on the stream margins. Closer to the coast it meanders through (pōhutukawa)/gorse-pampas-*Ficinia nodosa*-buffalo grass shrubland (Vegetation Type 9).

7. FLORA

On hundred and fifty-seven (157) indigenous and 62 introduced species were recorded during the field surveys undertaken in 2013 and 2014. Pīngao is the only species recorded that has a threat ranking: At Risk-Declining, as per de Lange *et al*. (2013).

Six exotic species present on the property are listed in the Waikato Regional Pest Management Strategy: Australian sedge, gorse, pampas, ragwort, woolly nightshade, and Mexican devil are all classified as a Containment Species, which "requires the occupier to destroy all plants located 20 m or less from the boundary of land occupied".

8. FAUNA

Avifauna

Seven indigenous species were observed or heard during field surveys in 2013 and 2014. Of these, northern New Zealand dotterel (tuturiwhatu) and Caspian tern (taranui) are classified as Threatened-Nationally Vulnerable by Robertson *et al*. (2013), and variable oystercatcher (torea) is classified as At Risk-Recovering. See Table 6 for a full list.

DOC (2010) note that Wainuiototo Beach is a successful breeding site for New Zealand dotterel and variable oystercatcher, with three dotterel pairs nesting there in the 2009/10 breeding season, at the mouth of the stream on Wainuiototo Farm.

Brown teal (pāteke; *Anas chlorotis*; At Risk-Recovering) are now known to be present within the Pungapunga catchment, having colonised as a result of successful translocations and active management at Port Charles and Moehau. It is possible, therefore, that brown teal utilise streams on Wainuiototo Farm (DOC 2010).

North Island brown kiwi (*Apteryx mantelli*; Threatened-Nationally Vulnerable) are known to be present to the north of the property and it is therefore possible that birds will utilise or travel through the property (DOC 2010).

Table 6: Avifauna recorded in field surveys at Wainuiototo Farm, Whangapoua, 2013-2014.

Common Name	Species	Threat Status[1]
Bellbird	*Anthornis melanura melanura*	Not Threatened
Caspian tern	*Sterna caspia*	Threatened-Nationally Vulnerable
New Zealand pigeon, kererū	*Hemiphaga novaeseelandiae*	Not Threatened
Northern New Zealand dotterel	*Charadrius obscurus aquilonius*	Threatened-Nationally Vulnerable
North Island fantail	*Rhipidura fuliginosa placabilis*	Not Threatened
Swamp harrier	*Circus approximans*	Not Threatened
Tūī	*Prosthemadera novaeseelandiae novaeseelandiae*	Not Threatened
Variable oystercatcher	*Haemotopus unicolor*	At Risk-Recovering
Australian magpie	*Gymnorhina tibicen*	Introduced and naturalised
California quail	*Callipepla californica*	Introduced and naturalised
Chaffinch	*Fringilla coelebs*	Introduced and naturalised
Dunnock	*Prunella modularis*	Introduced and naturalised
Eastern rosella	*Platycercus eximius*	Introduced and naturalised
Eurasian skylark	*Alauda arvensis*	Introduced and naturalised
Goldfinch	*Carduelis carduelis*	Introduced and naturalised
Peacock	*Pavo cristatus*	Introduced and naturalised
Welcome swallow	*Hirundo neoxena neoxena*	Introduced and naturalised
Yellowhammer	*Emberiza citrinella*	Introduced and naturalised

[1] Avifauna Threat classification as per Robertson *et al*. 2012.

Various other indigenous species will also utilise the site, including: morepork (ruru; *Ninox novaeeseelandiae*), kererū (*Hemiphaga novaeseelandiae*), grey warbler (riroriro; *Gerygone igata*), black shag (*Phalacrocorax carbo novaehollandiae*), little shag (*Phalacrocorax melanoleucos brevirostris*), spur-winged plover (*Vanellus miles novaehollandiae*), and paradise shelduck (putangitangi; *Tadorna variegata*).

Other coastal species will also utilise the beach area, including northern blue penguin (*Eudyptula minor iradalei*; At Risk-Declining) and pied shag (*Phalacrocorax varius varius*; karuhiruhi; Threatened-Nationally Vulnerable). Gannets (takapu; *Morus serrator*) commonly hunt close to the breaker zone and beyond.

Ten introduced bird species were recorded (Table 6).

Herpetofauna

A number of reptile species have been recorded in Colville Ecological District, including Hochstetter's frog (*Leiopelma hochstetteri*), classified as At Risk-Declining[1], which were recorded in an unnamed stream to the west of the property in 2008 and may still be present in the catchment[2]. Hochstetter's frogs are semi-aquatic, being found by day in wet crevices and under stones or logs close to the water's edge in shaded streams.

Archey's frog (*Leiopelma archeyi*; Threatened-Nationally Vulnerable) have also been recorded in the Colville Ecological District.

Other reptiles recorded in Colville Ecological District include: shore skink (*Oligosoma smithi*), moko skink (*Oligosoma moco*; At Risk-Relict) and egg-laying skink (*Oligosoma suteri*; At Risk-Relict), Coromandel striped gecko (*Toropuku* 'Coromandel'; Threatened-Nationally Endangered), forest gecko (*Mokopirirakau granulatus*; At Risk-Declining), and common gecko (*Woodworthia maculata*)[3].

It is possible that indigenous frogs and various lizard species are present on the property but no habitats utilised by these species are to be affected (i.e. no clearance of indigenous vegetation is to occur).

Bats

Long-tailed bats (*Chalinolobus tuberculatus* (North Island); Threatened-Nationally Vulnerable[4]) have been recorded in Colville Ecological District, although it is unclear how widespread they are. It is possible that they utilise habitats on the property, but would not be adversely affected by the proposed development.

Terrestrial Invertebrates

A diverse range of indigenous invertebrate species will be present in indigenous vegetation on the property, but will not be affected.

1 Frogs have been ranked by Newman *et al*. (2013).
2 Department of Conservation herpetofauna database, accessed December 2012.
3 Reptiles have been ranked by Hitchmough *et al*. (2012).
4 Bats have been ranked by O'Donnell *et al*. (2010).

Freshwater Biota

A freshwater survey was not undertaken for this project. There are no records of freshwater fish recorded for the unnamed stream in the property in the Freshwater fish database[1], but there are a number of records for nearby streams and it is likely that these species are also present in the local catchment. Species recorded in nearby catchments include: banded kōkopu (*Galaxias fasciatus*), longfin eel (*Anguilla dieffenbachii*), shortfin eel (*Anguilla australis schmidtii*), redfin bully (*Gobiomorphus huttoni*), common smelt (*Retropinna retropinna*), torrent fish (*Cheimarrichthys fosteri*), and the freshwater invertebrate, koura (*Paranephrops zealandicus*).

Longfin eel, torrent fish, and redfin bully are all classified as At Risk-Declining (Allibone *et al*. 2010). Koura are classified as At Risk-Declining (Grainger *et al*. 2014).

The concrete crossing of the unnamed stream at the northern end of the property is slightly perched, which may impede passage of non-climbing fish species into the upper reaches of the stream.

Introduced Mammals

Feral pigs (*Sus scrofa*), domestic stock (*Bos taurus*), rabbit (*Oryctolagus cuniculus cuniculus*), and brushtail possum (*Trichosurus vulpecula*) are all present.

The property will also have a typical suite of mainland pest fauna such as feral cats (*Felis catus*), Norway rat (*Rattus norvegicus*), ship rat (*R. rattus*), mice (*Mus musculus*), hedgehog (*Erinaceus europaeus*), and mustelids (stoats - *Mustela erminea*, and weasels - *Mustela nivalis vulgaris*).

9. ECOLOGICAL VALUES

Vegetation

Four areas of indigenous vegetation and habitats are of very significant ecological value:

- Forest-covered escarpment adjacent to coast.
- Dunes and beach adjacent to Wainuiototo Bay.
- Indigenous forest at the northern end of property.
- Indigenous forest in the south-western corner of the property.

As noted in Section 5 above, all of these areas are recognised in Natural Character and/or Outstanding Landscape overlays in the proposed District Plan. They are also identified as Significant Natural Areas and, as such, are ecologically significant in terms of the Waikato Regional Policy Statement.

[1] Freshwater fish data base (NIWA: https://nzffdms.niwa.co.nz/search) accessed April 2014.

Apart from the key areas noted above, the balance of the property has a cover of pasture and/or gorse, which is currently of low ecological value.

Aquatic Habitats

The stream on the property is of very good quality and is ecologically significant, and most of the catchment has a cover of indigenous vegetation already recognised as being ecologically significant (see above).

Avifauna

A typical suite of indigenous and exotic birds is present in forest and pasture habitats at the property. Wainuiototo Beach is utilised by the threatened northern New Zealand dotterel and a range of other coastal birds.

Other Fauna

A range of other biota will be present, including indigenous lizards and invertebrates, and possibly bats, as noted above.

A summary of ecological values and constraints is provided in Table 7 below and ecological values and related constraints are illustrated in Figure 4.

Table 7: Relative ecological values and constraints at Wainuiototo Farm, Whangapoua.

Vegetation Type	Location	Relative Ecological Value	Relative Ecological Constraint
1. Pōhutukawa-dominant forest - adjacent to Wainuiototo Bay	Vegetated slopes and cliff faces above Wainuiototo Bay.	Very High	Very High
2. Kauri/kānuka-(pūriri)-(rewarewa)-(tānekaha) forest	South western corner.	Very High	Very High
3. Radiata pine forest Kānuka forest	Buffer between exotic shrubland and scrub, and indigenous forest and scrub.	High	High
4. Radiata pine forest	Western slopes of property and behind the fore dune.	Low	Low
5. Rewarewa-tānekaha/kānuka forest and scrub	Western slopes of property.	High	High
6. Kānuka scrub	North-western corner of property.	High	High-moderate
7. Kānuka treeland	Scattered throughout grazed pasture.	Moderate-low	Low
8. Gorse scrub	Western side of property.	Low	Low
9. (Pōhutukawa)/gorse-pampas-*Ficinia nodosa*-buffalo grass shrubland	North-eastern corner of property.	Moderate	High
10. Gorse-woolly nightshade-buffalo grass-kikuyu shrubland	Back dune vegetation at north-eastern corner of property.	Low	Low
11. Gorse/pasture grass shrubland grassland	Western side of grazed pasture.	Low	Low
12. Exotic pasture	Central portion of property.	Low	Low
13. Spinifex sandfield	Along New Chums Beach.	High	High
14. Vehicle tracks	Through the centre of grazed pasture and indigenous forest and scrub at the northern end of the property.	Low	Low
15. Unnamed stream	At the northern end of the study area.	Very High	Very High

10. POTENTIAL ECOLOGICAL EFFECTS

All of the four proposed house sites and ancillary buildings are situated within habitats that are currently dominated by exotic species and/or have low ecological constraints. Ecological values and potential effects are summarised in Table 8.

Table 8: Ecological values and potential ecological effects for each of the four house sites proposed at Wainuiototo Farm, Whangapoua

House Site	Ecological Values		Potential Effects
	House Site	Accessway	
1	Low	Low	This site is pasture but is the most ecologically sensitive as it is located adjacent to the stream and is relatively close to the coast.
2	Low	Low	This site is gorse and pasture and will result in no adverse ecological effects.
3	Low	Low	This site is gorse and pasture and will result in no adverse ecological effects.
4	Low	Low	This site is pasture.

It is evident from the summary in Table 8 above that the direct effects of establishing the four proposed house sites will be less than minor. Plates 4-7 below show the character of each of the proposed house sites.

Plate 4: Proposed House Site 1.

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Figure 4. House sites,vehicles access, and relative ecological values at Wainuiototo Farm, Whangapoua

0 100 200 m

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Scale: 1:4,000
Date: 24/06/2014
Cartographer: FM
Format: A3

Plate 5: Proposed House Site 2.

Plate 6: Proposed House Site 3.

Plate 7: Proposed House Site 4.

Subdivision for housing can potentially result in the following adverse effects:

- Vegetation clearance;
- Displacement or disturbance of fauna;
- Degradation of in-stream fish habitats;
- Erosion as a result of earthworks;
- Introduction of new pest plant species;
- Predation or disturbance of indigenous fauna by domestic pets.
- Increased risk of wild fire.

Each of these potential effects is discussed further below.

Vegetation Clearance

No clearance of indigenous vegetation will occur as a result of clearance of house sites or related accessways.

Displacement or Disturbance of Avifauna

Avifauna recorded during field surveys are either common pastoral species or users of coastal habitats that will not be directly affected by the proposed subdivision or house construction. Construction noise may result in local short-term disturbance of avifauna, but these effects will be less than minor.

There is some potential for predation of indigenous fauna by domestic pets, but the proposal is for only four houses, so any potential effects will be minor. In any case,

the proposal is to ban domestic cats and to control the use of dogs on the beach. There are currently no controls on dogs on Wainuiototo Beach and the owners of the property intend to exclude dogs from the beach during the breeding season for New Zealand dotterel and variable oystercatcher.

A pest control programme is to be implemented on the property and this will include trapping to control mustelids and cats in the vicinity of the beach. Signs will be erected (and maintained) to publicise use of the beach by nesting shorebirds. Property owners and users will be made aware of the use of the beach by nesting shorebirds. Access to the beach will be via a single defined accessway.

Freshwater Habitat

Subject to the use of good sediment control practices during construction of accessways and house sites, there will be no adverse effects on aquatic habitats.

The owners propose to modify the existing concrete ford crossing of the stream, to improve upstream access for indigenous fish species.

Potential Introduction of New Pest Plant Species

There is some potential for residents of the proposed houses to introduce new invasive pest plants into gardens. The proposal includes controls on the use of potentially invasive pest plant species, and on the disposal of garden waste.

Increased Risk of Wildfire

There is a risk that residents will light fires and that these could escape into adjacent vegetation. This is a real risk as the site is seasonally dry and adjacent vegetation is very fire prone, e.g. gorse and dry coastal forest. Open fires[1] will be banned on all titles, year-round, to minimise risk.

Overall Effects

Overall, potential ecological effects will be less than minor, provided best practice is utilised during construction. No soils from excavation or earthworks should be placed near the stream or sand dune areas and care should be to ensure that sediment is not washed into the stream during heavy rainfall events.

11. ECOLOGICAL ENHANCEMENT AND MANAGEMENT

Overview

The owners of Wainuiototo Farm intend to undertake very extensive ecological restoration of the property. The entire property is to be retired from grazing and indigenous vegetation is to be restored to all of the area except for the vehicle accessways and open (mown) areas to be retained in association with each of the four

[1] Note that 'open fires' do not include incinerators or barbeques, or other enclosed fires.

house sites. Retirement of the entire property will be accompanied by a change to a low impact apiary operation. Vehicle accessways will be maintained for access to the four house sites, and also low impact existing vehicle tracks required for property management. Overall retirement of the property is a very significant and positive initiative.

Due to the relatively large scale of the existing gorse infestation, the intention is to allow this area to regenerate naturally back to indigenous vegetation. Overall, this will involve an area of about 16.76 hectares.

An outline of the objectives and types of initiatives proposed is set out below.

Objectives

- Continue to allow public access along the sandy beach/foreshore and permit ongoing public access along sandy beach for future generations;
- Preserve, restore and enhance the foreshore, sand dunes, and forested escarpment;
- Preserve, restore, and enhance the existing indigenous forest and surrounding hinterland;
- Substantially re-afforest the existing farmland into indigenous coastal forest through a combination of natural regeneration and indigenous revegetation planting;
- Protect and actively manage breeding habitat for shorebirds on the property;
- Protect and enhance the stream and freshwater habitats on the property;
- Monitor and reduce the adverse effects of increasing public visitation to Wainuiototo Beach and, in particular, the risk of fire damage from overnight campers.

Protection Management Initiatives

- Legal protection of areas of significant indigenous vegetation (28.64 hectares or 45% of the property);
- Legal protection of areas of planted indigenous revegetation and natural regeneration (another 29 hectares or so in total, comprising a further 47% of the property). This includes indigenous planting of selected parts of the property (11.58 ha) that is currently grazed pasture;
- Ongoing management of natural regeneration across an extensive area of farmland to be returned to indigenous forest;
- Fencing along the southern boundary, to permanently remove stock access to the property from the adjoining Te Pungapunga Station;

- Implementation of a more extensive targeted weed management plan for the sand dunes and the forested escarpment. This will include the control of pampas and other species on the dunes and the felling of wilding pines on the escarpment;

- Protection and active management of breeding sites for shorebirds. This will require monitoring, temporary fencing, pest control, and signage.

- The owners are proposing to establish a 'Beach Management Trust' to assist with restoration of the dune system and protection of shorebirds. They are also more than willing to provide ongoing access for other workers addressing shorebird protection, e.g. Department of Conservation and the New Zealand Dotterel Watch Programme that is currently underway on the Coromandel Peninsula.

- Implementation of a carefully managed pest animal control programme across the whole property, targeting mustelids, possums, rabbits, feral cats, and pigs;

- Enhance the existing northern ecological corridor and create a more substantial corridor across the entire property;

- Planting of the southern riparian margin along the stream and modification of the existing concrete ford to improve fish passage;

- Realignment of the existing vehicular access to the beach, to reduce its visibility, and replanting of the existing access route with pohutukawa and other dune plant species;

- Diversion of overland water flows away from the sand dunes in front of the pine stand adjacent to the beach, by alteration of drainage channels, including the placement of two new culverts. This work has already been done.

- Extension of the existing low impact walking track network across the escarpment and existing vehicle tracks on the balance of property for ongoing access for the control of weeds and pest animals, and monitoring purposes;

- Creation of an esplanade strip above mean spring high tide level to the seaward side of the sand dunes, to allow for public access along sandy beach in perpetuity.

The above matters should be addressed in an Ecological Management Plan, to be provided as a condition of the subdivision consent. Management requirements vary in different parts of the property and the Ecological Management Plan should be based on Management Units, as discussed further in the next section.

12. FUTURE MANAGEMENT

12.1 Management units

The property has been divided into six proposed management units, as shown in Figure 5. The management proposed in each of the six units is set out below.

Management Unit 1 - Indigenous Forest (28.64 ha)

- Management Unit 1 currently is predominantly indigenous forest. This unit is of very significant biodiversity value and will provide the greatest ecological gains in the short term.
- Formal protection by way of a covenant in perpetuity is to be implemented.
- The southern margin of the stream should be planted, where it is currently pasture, and the vertical lip at the ford should be altered to improve fish passage.
- Fencing to permanently remove stock from the property is to occur, in conjunction with the neighbouring landowner on the southern boundary.
- Pest plant species in this management unit that require targeted management include wilding pines, gorse, woolly nightshade, and pampas. Other pest plant species such as prickly hakea and buddleia should be monitored and controlled where necessary.
- A pest animal control programme is to be implemented, to control possums, mustelids, and feral cats (and pigs through recreational hunting).

Management Unit 2 - Gorse Regeneration to Indigenous Vegetation (16.76 ha)

- Natural succession from gorse to indigenous forest is proposed for this management unit.
- This area will involve relatively little active management. A weed control programme with associated revegetation planting for such a large area would be cost prohibitive, and out of proportion to the ecological effects of the subdivision.
- As outlined in Section 4 above, historical photographs show that regeneration from gorse to a predominantly indigenous canopy has taken up to 30-40 years. Indigenous successions through gorse can occur relatively rapidly in areas with good rainfall[1], warm temperatures, and abundant indigenous seed sources, and indigenous dominance can be achieved within a 15-30 year period.
- A primary vehicle access track will bisect the main area of gorse and has been included in Management Unit 3 (see below) as 5 m on both sides is to be replanted with indigenous species.

[1] Castle Rock in the Matawai Catchment has a mean annual rainfall of 2,243 mm Rainfall data accessed from Waikato Regional Council May 2014 (http://www.waikatoregion.govt.nz/riverlevelsandrainfall).

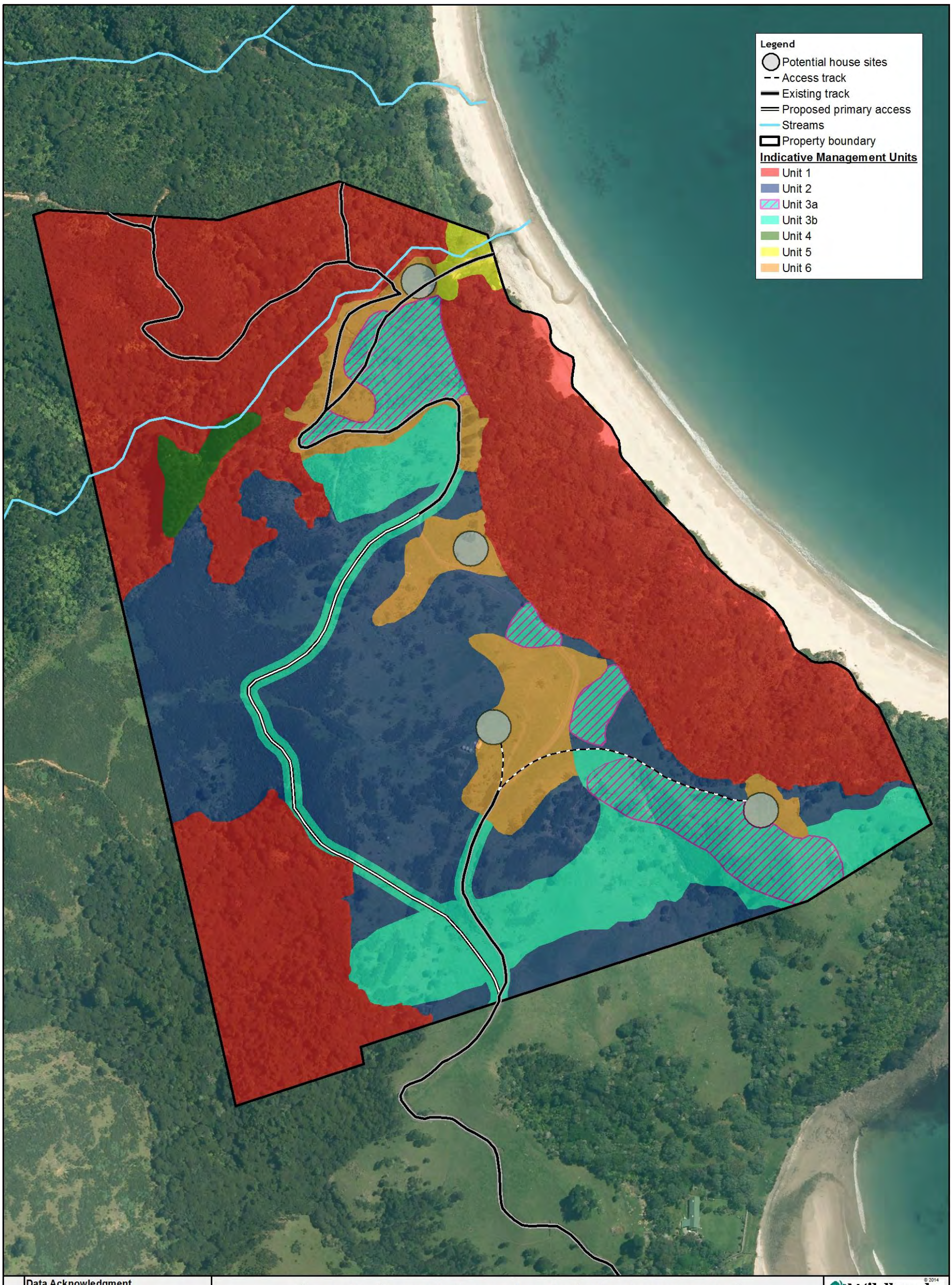

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Figure 5. Revegetation and ecological enhancement of Wainuiototo Farm, Whangapoua

0 100 200 m

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Scale: 1:4,000
Date: 30/07/2014
Cartographer: FM
Format: A3

- Other informal tracks in Management Unit 2 that have been used in the past for access the rear of the property will be kept open. At present gorse is colonising any open space available and is seriously impeding access for management purposes. A mulcher (or a rotary slasher) would be a practical way to control the gorse on and adjacent to tracks, and keep selected tracks open for ongoing use.

- Wilding pines are the only plant species that currently need to be controlled in this management unit.

Management Unit 3 - Indigenous Revegetation (11.58 ha)

Management Unit 3 will require the greatest amount of active management:

- The unit has been divided into two subunits, 3a and 3b.

- A 5 m strip will be planted on both sides of the primary vehicle access tracks.

- A detailed revegetation plan is to be provided as a condition of resource consent.

- Fencing will be required along the southern boundary, to permanently exclude stock from the property.

Sub-unit 3a (3.96 ha)

- Subunit 3a is to be planted with a mixture of kānuka and pōhutukawa, along with other standard revegetation species such as karamu and mānuka. Diversity can be added by also using species such as karo (*Pittosporum crassifolium*), toetoe (*Austroderia fulvida*), houpara (*Pseudopanax lessonii*), pūriri (*Vitex lucens*), kohekohe (*Dysoxylum spectabile*), and ngaio (*Myoporum laetum*).

Sub-unit 3b (7.62 ha)

- Sub-unit 3b is to be planted predominantly with manuka, for honey production, but a low density of other species will also be planted, such as pohutukawa, kanuka, karamu, houpara, and pūriri.

Management Unit 4 - Pine Stand (0.66 ha)

- Management Unit 4 is a stand of pines that requires removal.

- Fell pines to waste (i.e. fell and allow to rot down, unless it is cost-effective to remove them for commercial use). Natural regeneration will occur relatively quickly.

- Try to minimise crushing of adjacent indigenous vegetation when felling is undertaken.

Management Unit 5 - Dunes and Beach Access (0.40 ha)

- Management Unit 5 (0.4 ha) requires control of weed species such as saltwater paspalum, exotic grasses, and gorse. Other species that should be controlled

include any occurrences of agapanthus, vinca, onion weed, gladioli, jonquil, and arum lily.

- Avoid any shorebird nesting sites within or adjacent to this area. Any nesting sites are to be identified with temporary fencing and signage, and protected with predator control trapping.
- The pine stand is to be felled and removed.
- The ground surface will be recontoured if any damage occurs during pine removal.
- The existing vehicle access track to beach will be realigned, so that it is less obvious, and screened with appropriate indigenous planting. This is to be the only beach access point in this area.
- Indigenous species (eco-sourced) will be re-established on the dunes, especially in the area where pines are to be removed. Species suitable for planting on the rear dune part of this site include pōhutukawa, houpara, taupata (*Coprosma repens*), karo, and kānuka. The foredune already has a good cover of spinifex (*Spinifex sericeus*) and little or no planting will be required here.
- Undertake ongoing monitoring and weed control, and planting, as required.

<u>Management Unit 6 - House Sites and Grassed Areas (4.74 ha)</u>

- This unit includes the four house sites (0.5 ha) and associated areas (4.24 ha) to be retained in grass.
- Grassed areas, if retained, will be maintained by mowing, not grazing.
- Domestic cats are to be banned.
- Property owners will not be permitted to plant any pest plant species.
- Domestic dogs will be required to be under control.

12.2 Restoration and revegetation plan

A restoration plan is essential to successfully achieved the desired ecological enhancement and restoration required by the landowner. Successful restoration of indigenous plant communities will require careful management and implementation. A revegetation plan should be provided as a condition of the subdivision consent, and should address the following:

- Project management.
- Natural regeneration and planting within each of the relevant management units.
- Species selection information - plant schedules, plant stock, eco-sourcing requirements, plant spacing, matching of species to habitats, successional planting and timing.

- Site preparation - initial works, follow-up works and final preparation.
- Pest animal control, particularly of rabbit control prior to planting, and also possums.
- Planting procedures.
- Monitoring - photopoint establishment and site inspection.
- Maintenance - timing, releasing, infill planting, pest animals, and targeted weed control.
- Weed control and ongoing management.
- Pest control programme.
- Specific provisions to protect nesting NZ dotterel and variable oystercatcher.
- Signage, e.g. in the vicinity of the beach, to address dogs, fire, dotterel protection, and dune restoration programme.

Weed management and pest control are discussed further below.

12.3 Weed management

Eighteen plant species present on the property are considered to be pest plants (see Table 9) and should be controlled. Of the eighteen pest plant species present, six are listed in the Waikato Regional Plan as Containment Species[1]: Australian sedge, gorse, Mexican devil, pampas, ragwort, and woolly nightshade. Monitoring of containment species should be undertaken on an annual cycle, with follow-up control where necessary.

Table 9: Pest plant species present at Wainuiototo Farm, Whangapoua.

Common Name	Species Name	Pest Plant Ranking[2]
Agapanthus	*Agapanthus praecox*	NA
Arum lily	*Zantedeschia aethiopica*	NA
Australian sedge	*Carex longebrachiata*	Containment Species
Buffalo grass	*Stenotaphrum secundatum*	NA
Gladioli	*Gladiolus undulatus*	NA
Gorse	*Ulex europaeus*	Containment Species
Jonquil	*Narcissus jonquilla*	NA
Kikuyu grass	*Cenchrus clandestinum*	NA
Maritime pine	*Pinus pinaster*	NA
Mexican daisy	*Erigeron karvinskianus*	Containment Species
Mexican devil	*Ageratima adenophora*	Containment Species
Onion weed	*Allium triquetrum*	NA
Pampas,	*Cortaderia selloana*	Containment Species
Periwinkle	*Vinca major*	NA

[1] Containment Species are those that land occupiers are responsible for controlling under Strategy rules (Waikato Regional Council 2010). http://www.waikatoregion.govt.nz/PageFiles/7035/2013%2014%20operational%20plan.pdf

[2] Listed in the Waikato Regional Pest Management Strategy; Accessed April 2014. http://www.waikatoregion.govt.nz/PageFiles/7035/2013%2014%20operational%20plan.pdf

Common Name	Species Name	Pest Plant Ranking[2]
Radiata pine	*Pinus radiata*	NA
Ragwort	*Jacobaea vulgaris*	NA
Saltwater paspalum	*Paspalum vaginatum*	NA
Sea rocket	*Cakile maritima*	NA
Woolly nightshade	*Solanum mauritianum*	Containment Species

Weed management requirements are summarised in Table 10.

Table 10: Initial and ongoing weed control required in each Management Unit at Wainuiototo Farm, Whangapoua.

Management Unit	Pest Plant Management Required
1	• Wilding pines (radiata pine and maritime pine) - all wilding pines should be felled into adjacent vegetation. • Gorse should be controlled along visible margins and on the coastal escarpment. • Woolly nightshade should be controlled along margins and on the coastal escarpment. • Pampas should be controlled along margins and on the coastal escarpment. • Agapanthus, onion weed, gladioli, jonquil, arum lily, prickly hakea, and buddleia should be monitored and controlled where necessary.
2	• Control established wilding pines on coastal escarpment. • Control gorse in areas to be planted. • Mulch gorse on selected tracks.
3	• Pest plant control as part of revegetation plan
4	• Fell wilding pines into adjacent vegetation.
5	• Saltwater paspalum - this very invasive species will require ongoing control and monitoring to ensure that the area is not reinfested. • Exotic grasses (kikuyu grass and buffalo grass) - present in this Management Unit should be controlled and replanted with ecologically appropriate species, e.g. spinifex on the foredune and coastal shrub species further back. • The stand of radiata pine should be removed and replanted with ecologically appropriate coastal species. • Gorse - all plants in this area should be controlled and any revegetation planting should include ecologically appropriate species, e.g. spinifex on the foredune and coastal shrub species further back. • Agapanthus, onion weed, gladioli, jonquil, and arum lily should be monitored and controlled where necessary.

12.4 Pest animal control and monitoring

The property includes a range of environments and provides habitat and ecological corridors for a wide variety of indigenous plants and fauna. A carefully managed pest animal control programme is to be implemented to enhance coastal and inland habitats and to permanently exclude stock from the property. Pest animal control is required to protect and ensure success of restoration planting (primarily rabbits, but potentially pigs); and to protect and enhance indigenous fauna.

Rabbit control will be necessary prior to revegetation planting within Management Unit 3.

Pest animal management in in Management Units 1 and 5 should focus on the control of mustelids, rabbits, feral cats, pigs, and possums.

Pest control to enhance habitats of shore and wading birds along the coast should specifically include mustelids, possums, and feral cats.

It is proposed exclude domestic dogs from the beach areas at key times for New Zealand dotterel.

12.5 Monitoring

Indigenous Fauna

Five-minute bird counts should be undertaken to obtain baseline data. Further five-minute bird counts and assessments of pest animal presence/absence will be required to assess the effects of pest control.

Vegetation and Flora

Pīngao (At Risk-Declining) is the only plant species recorded during this survey that is classified as Threatened or At Risk (as per de Lange *et al*. 2013). However monitoring is required to ensure weed species and human pressures do not adversely affect the population.

Pohutukawa canopy condition should be monitored to assess the effects of possums.

13. LEGAL PROTECTION

Protection by way of covenants should be implemented for:

- *Management Unit 1*: This should provide for permanent legal protection in perpetuity, ongoing low impact access (walking tracks and associated maintenance), camping by the owners, small shelters and huts for use by the owners, ongoing weed and pest control, and a prohibition on fire.
- *Management Unit 2*: This should allow for permanent legal protection in perpetuity, ongoing vehicle access, weed and pest control, and a prohibition on fire.
- *Management Unit 3*: As for Management Unit 2, plus indigenous planting and maintenance as required.
- *Management Unit 4*: As for Management Unit 2.
- *Management Unit 5*: This should allow for permanent legal protection in perpetuity, ongoing vehicle and foot access to the beach, indigenous planting and maintenance, and weed and pest animal control.
- *Management Unit 6*: A ban on domestic cats. Exclusion of all pest plant species, including a prohibition on owners or residents planting or holding any species identified in the Regional Pest Management Strategy or in the National Pest Plant Accord, a prohibition on open fires, a requirement for dogs to be under control

and not allowed to roam, and a prohibition on the disposal of garden waste other than by mulching *in situ* or composting within defined compositing sites.

14. CONCLUSIONS

The subdivision proposed at Wainuiototo Farm, Whangapoua, will involve the development of only four house sites in pastoral vegetation and habitats of low ecological value and with low ecological constraints.

There are, however, habitats on the property of very high ecological value, including the beach (shorebird habitat), adjacent dunes, high quality coastal forest on a steep scarp, coastal forest on hill country, and a high quality stream. The owners intend to protect all of these significant features and to undertake ecological enhancement by controlling weeds and pest animals on a long-term basis.

Perhaps the most significant protection initiative is that the entire balance of the property, other than the areas required for the four house sites and associated open areas and vehicle accessways, is to be retired and restored to indigenous vegetation. Some areas will be planted and other areas will develop into an indigenous cover via a succession through an initial gorse cover.

This proposed development is, in ecological terms, low key and benign. It will result in very significant ecological gains, which will be protected through permanent legal protection, in perpetuity.

ACKNOWLEDGMENTS

Project liaison was provided by the landowners Ross and Dee Mear. Background information and discussion was also provided by Russell De Luca (Russell De Luca Consultancy Limited). Field visits were also undertaken in the company of Ross Stewart (RMS Surveyors Limited), and Richard Hart (Landscape Architect). Sharon Peek (Waikato Regional Council) provided the historical photographs.

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APPENDIX 1

SITE PHOTOGRAPHS

Plate 1: Most of the rolling hillslopes currently comprise grazed pasture with patches of gorse.

Plate 2: An unnamed stream flows into the sea at the northern-most coastal boundary.

Plate 3: A concrete ford provides access across the stream, approximately 180 m inland.

Plate 4: Fish access is limited at the ford and will require permanently placed rocks or climbing rope.

Plate 5: Adjacent to the ford the steam was *c*.2.5 m across and *c*.30 cm deep.

Plate 6: Large areas of gorse scrub with scattered woolly nightshade are present on the western slopes.

Plate 7: The farm is currently grazed but gorse is slowly encroaching (Vegetation Type 11). Note the gorse scrub on the lower hillslopes in the distance (Vegetation Type 8) and kauri/kānuka-(pūriri)-(rewarewa)-(tānekaha) forest (Vegetation Type 2) at the middle left.

Plate 8: Kauri/kānuka-(pūriri)-(rewarewa)-(tānekaha) forest (Vegetation Type 2) has a depauperate understorey near margins.

Plate 9: Metalled tracks through scrub have scattered pampas and gorse throughout.

Plate 10: A pocket of radiata pine forest is present on the property.

Plate 11: Possum and mustelid control has been undertaken on the property.

LIST OF VASCULAR PLANTS ON WAINUIOTOTO FARM

INDIGENOUS SPECIES

Gymnosperms

Agathis australis	kauri
Dacrycarpus dacrydioides	kahikatea
Dacrydium cupressinum	rimu
Phyllocladus trichomanoides	tānekaha
Podocarpus totara var. *totara*	totara
Prumnopitys ferruginea	miro

Monocot. trees and shrubs

Cordyline australis	tī kouka, cabbage tree
Cordyline pumilio	tī rauriki
Rhopalostylis sapida	nīkau

Dicot. trees and shrubs

Alectryon excelsus subsp. *excelsus*	tītoki
Aristotelia serrata	makomako, wineberry
Beilschmiedia tarairi	taraire
Beilschmiedia tawa	tawa
Brachyglottis repanda	rangiora
Carmichaelia australis	maukoro, tainoka, taunoka
Coprosma grandifolia	kanono, raurēkau, raurākau, manono
Coprosma lucida	karamū, kāramuramu, glossy karamū
Coprosma macrocarpa	karamū, kāramuramu
Coprosma repens	taupata
Coprosma rhamnoides	
Coprosma robusta	karamū, kāramuramu
Coriaria arborea var. *arborea*	tutu
Corynocarpus laevigatus	karaka
Dodonaea viscosa	akeake
Dysoxylum spectabile	kohekohe
Elaeocarpus dentatus	hinau, whinau
Gaultheria antipoda	tawiniwini, koropuka, takapo, taupuku
Geniostoma ligustrifolium var. *ligustrifolium*	hangehange
Hebe stricta var. *macroura*	koromiko
Hebe stricta var. *stricta*	
Hedycarya arborea	porokaiwhiri; pigeonwood
Knightia excelsa	rewarewa
Kunzea ericoides	kānuka
Leptecophylla juniperina var. *juniperina*	prickly mingimingi
Leptospermum scoparium agg.	mānuka

Leucopogon fasciculatus	mingimingi
Litsea calicaris	mangeao
Melicope simplex	poataniwha
Melicope ternata	wharangi
Melicytus ramiflorus subsp. *ramiflorus*	māhoe
Metrosideros excelsa	pōhutukawa
Myoporum laetum	ngaio
Myrsine australis	māpou, matipou, māpau
Myrsine salicina	toro
Nestegis lanceolata	white maire, maire rauriki
Olearia furfuracea	akepiro, tanguru
Piper excelsum subsp. *excelsum*	kawakawa
Pittosporum crassifolium	karo
Pittosporum huttonianum	
Pittosporum tenuifolium	kohuhu, rautahiri, rautawhiri
Pomaderris kumeraho	kūmarahou
Pseudopanax arboreus	whauwhaupaku, puahou, five finger
Pseudopanax crassifolius	horoeka, lancewood
Pseudopanax crassifolius × *P. lessonii*	
Pseudopanax lessonii	houpara
Schefflera digitata	patē
Sophora tetraptera	kōwhai
Vitex lucens	pūriri

Monoco. lianes

Freycinetia banksii	kiekie
Ripogonum scandens	supplejack, kareao

Dicot. lianes

Calystegia sepium subsp. *roseata*	pohue
Calystegia soldanella	panahi, shore bindweed
Calystegia soldanella × *C. sepium*	
Clematis paniculata	puawananga
Lygodium articulatum	mangemange
Metrosideros fulgens	rata
Metrosideros perforata	aka
Muehlenbeckia complexa	pōhuehue
Parsonsia heterophylla	akakaikiore
Rubus schmidelioides var. *schmidelioides*	tataramoa, bush lawyer

Lycopods and psilopsids

Tmesipteris elongata
Tmesipteris tannensis

Ferns

Adiantum cunninghamii	huruhuru tapairu, maidenhair fern
Adiantum diaphanum	huruhuru tapairu, maidenhair fern
Adiantum hispidulum	huruhuru tapairu, maidenhair fern
Asplenium bulbiferum	mouku, hen and chicken fern
Asplenium flaccidum	makawe, ngā makawe o Raukatauri
Asplenium oblongifolium	huruhuru whenua
Asplenium polyodon	petako
Blechnum chambersii	rereti, nini
Blechnum filiforme	panako
Blechnum novae-zelandiae	kiokio
Cyathea dealbata	ponga, silver fern
Cyathea medullaris	mamaku
Dicksonia squarrosa	whekī
Doodia australis	pukupuku
Histiopteris incisa	mātātā, water fern
Hymenophyllum demissum	irirangi, piripiri, filmy fern
Hymenophyllum sanguinolentum	piripiri, filmy fern
Lastreopsis glabella	
Lygodium articulatum	mangemange
Microsorum pustulatum	kōwaowao, pāraharaha, hound's tongue fern
Paesia scaberula	mātātā
Pellaea rotundifolia	tarawera, button fern
Pneumatopteris pennigera	pākau
Pteridium esculentum	rārahu, bracken
Pteris macilenta	titipo, sweet fern
Pyrrosia eleagnifolia	leather-leaf fern

Orchids

Earina autumnalis	raupeka
Earina mucronata	peka-a-waka
Ichthyostomum pygmaeum	piripiri
Microtis unifolia agg.	
Thelymitra longifolia	

Grasses

Deyeuxia avenoides	
Dichelachne crinita	plume grass
Lachnagrostis billardierei	sand wind grass
Microlaena stipoides	pātītī, meadow rice grass
Oplismenus hirtellus subsp. *imbecillis*	
Rytidosperma gracile	
Spinifex sericeus	kōwhangatara, spinifex
Zoysia pauciflora	

Sedges

Carex breviculmis	
Carex geminata agg.	rautahi
Carex pumila	
Carex testacea	
Cyperus ustulatus f. *ustulatus*	toetoe upoko-tangata
Ficinia nodosa	wīwī
Ficinia spiralis	pīngao
Gahnia lacera	tarangārara, toetoe kiwi, toetoe ngaungau, tatangi
Isolepis cernua	
Lepidosperma laterale	
Machaerina sinclairii	toetoe tūhara, pēpepe
Morelotia affinis	
Schoenus tendo	wīwī
Uncinia scabra	matau
Uncinia uncinata	kamu matau a Maui, kamu
Uncinia sp.	

Rushes

Juncus edgariae	wi, wīwī
Juncus pallidus	wi, wīwī
Juncus pauciflorus	
Juncus sarophorus	wi, wīwī
Luzula picta var. *picta*	

Monocot. herbs (other than orchids, grasses, sedges, and rushes)

Arthropodium cirratum	rengarenga
Astelia banksii	kakaha, pūwharawhara, wharawhara, kōwharawhara
Collospermum hastatum	kahakaha
Dianella nigra	tūrutu
Phormium tenax	harakeke, flax

Composite herbs

Senecio glomeratus	pukatea
Senecio hispidulus	

Dicot. herbs (other than composites)

Acaena novae-zelandiae	piripiri
Centella uniflora	
Dichondra repens	Mercury Bay weed
Disphyma australe subsp. *australe*	horokaka
Geranium solanderi	matuia-kūmara
Haloragis erecta subsp. *erecta*	toatoa

Hydrocotyle elongata	
Hydrocotyle heteromeria	
Hydrocotyle moschata	
Hydrocotyle novae-zeelandiae var. *novae-zeelandiae*	
Lobelia anceps	punakura
Oxalis exilis	
Ranunculus reflexus	maruru
Solanum americanum	raupeti
Wahlenbergia violacea	rimuroa

NATURALISED AND EXOTIC SPECIES

Gymnosperms

Pinus pinaster	maritime pine
Pinus radiata	radiata pine

Dicot. trees and shrubs

Crataegus monogyna	hawthorn
Hakea sericea	prickly hakea
Solanum mauritianum	woolly nightshade
Ulex europaeus	gorse

Dicot. lianes

Vinca major	periwinkle

Grasses

Agrostis capillaris	browntop
Anthoxanthum odoratum	sweet vernal
Bromus willdenowii	prairie grass
Catapodium rigidum	hard grass
Cenchrus clandestinus	kikuyu grass
Cortaderia selloana	pampas
Dactylis glomerata	cocksfoot
Holcus lanatus	Yorkshire fog
Miscanthus nepalensis	Himalaya fairy grass
Paspalum dilatatum	paspalum
Paspalum urvillei	Vasey grass
Paspalum vaginatum	saltwater paspalum
Sporobolus africanus	ratstail
Stenotaphrum secundatum	buffalo grass

Sedges

Carex divulsa	grey sedge
Carex longebrachiata	Australian sedge
Cyperus brevifolius	globe sedge

Monocot. herbs (other than orchids, grasses, sedges, and rushes)

Agapanthus praecox	agapanthus
Allium triquetrum	onion weed
Gladiolus undulatus	
Zantedeschia aethiopica	arum lily

Rushes

Juncus tenuis var. *tenuis*	track rush

Composite herbs

Ageratina adenophora	Mexican devil
Bidens frondosa	beggars' ticks
Cirsium vulgare	Scotch thistle
Conyza sumatrensis	broad-leaved fleabane
Crepis capillaris	hawksbeard
Erigeron karvinskianus	Mexican daisy
Gamochaeta calviceps	silky cudweed
Hypochaeris radicata	catsear
Jacobaea vulgaris	ragwort
Leucanthemum vulgare	oxeye daisy
Sonchus oleraceus	puha, sow thistle daisy[1]

Dicot. herbs (other than composites)

Cakile maritima	sea rocket
Euphorbia peplus	milkweed
Fragaria vesca	wild strawberry
Galium palustre	marsh bedstraw
Medicago lupulina	black medick
Modiola caroliniana	creeping mallow
Oxalis corniculata	horned oxalis
Physalis peruviana	cape gooseberry
Plantago australis	swamp plantain
Plantago lanceolata	narrow-leaved plantain
Portulaca oleracea	wild portulaca
Prunella vulgaris	selfheal
Phytolacca octandra	inkweed
Ranunculus repens	creeping buttercup

[1] Outside of site.

Rumex acetosella	sheep's sorrel
Silene gallica	catchfly
Solanum nigrum	black nightshade
Trifolium pratense	red clover
Trifolium repens	white clover
Verbascum thapsus	woolly mullein
Verbena bonariensis	purple-top
Veronica persica	scrambling speedwell

STATUTORY POLICY AND PLANS

NEW ZEALAND COASTAL POLICY STATEMENT

Implications for development of the property are discussed against the Policy 11 of the New Zealand Coastal Policy Statement in Table 3-5.

Table 3-1: Policy 11 of the New Zealand Coastal Policy Statement and implications for the proposed subdivision at Wainuiototo Farm, Whangapoua.

Relevant Provisions	Comments
Policy 11: Indigenous biological diversity (biodiversity)	
To protect indigenous biological diversity in the coastal environment:	
a. avoid adverse effects of activities on:	
i. indigenous taxa that are listed as threatened or at risk in the New Zealand Threat Classification System lists;	Pīngao (At Risk-Declining) and NZ dotterel are the only recorded At Risk or Threatened species in the area. Coastal dune habitat will not be affected
ii. taxa that are listed by the International Union for Conservation of Nature and Natural Resources as threatened;	See above.
iii. indigenous ecosystems and vegetation types that are threatened in the coastal environment, or are naturally rare;	Active sand dunes and stable sand dunes, - such as those that occur on New Chums Beach - are classified as 'Endangered' (Holdaway and Wiser 2012). These areas will not be affected.
iv. habitats of indigenous species where the species are at the limit of their natural range, or are naturally rare;	None known.
v. areas containing nationally significant examples of indigenous community types; and	None known.
vi. areas set aside for full or partial protection of indigenous biological diversity under other legislation; and	No legally protected areas are currently on this property, however future legal protection is proposed.
b. avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on:	
i. areas of predominantly indigenous vegetation in the coastal environment;	These are all going to be subject to formal protection.
ii. habitats in the coastal environment that are important during the vulnerable life stages of indigenous species;	None recorded, however the property has large areas of indigenous vegetation that provide important habitat for indigenous plants and fauna, all of which are to be protected.
iii. indigenous ecosystems and habitats that are only found in the coastal environment and are particularly vulnerable to modification, including estuaries, lagoons, coastal wetlands, dunelands, intertidal zones, rocky reef systems, eelgrass and saltmarsh;	The property has a large area of coastal escarpment and dunes, however these areas will not be affected, and are all to be protected.
iv. habitats of indigenous species in the coastal environment that are important for recreational, commercial, traditional or cultural purposes;	Wainuiototo Beach is considered to have high recreational value, and public access will continue to be available from the southern end of the beach.

Relevant Provisions	Comments
v. habitats, including areas and routes, important to migratory species; and	Fish passage up the unnamed stream on the property is to be enhanced.
vi. ecological corridors, and areas important for linking or maintaining biological values identified under this policy.	Ecological corridors are to be protected and expanded considerably by revegetation.

WAIKATO REGIONAL POLICY STATEMENT

Relevant policies in the Waikato Regional Policy Statement are assessed in the table below.

Table 3-2: Provisions in the operative Waikato Regional Policy Statement relevant to the proposed subdivision at Wainuiototo Farm, Whangapoua.

Policy One: Avoid, Remedy or Mitigate Adverse Effects on Biodiversity

Allow the use and development of natural and physical resources while avoiding, remedying or mitigating adverse effects on biodiversity in the Region.

Implementation Methods:

Policy	Comments
Advocate, through environmental education:	
i. community awareness of the values of indigenous vegetation and biodiversity and the need for its protection and restoration.	N/A
ii. voluntary mechanisms for the protection of the diversity and quality of habitat	Legal protection for indigenous vegetation and habitats is to be provided.
iii. the planting of indigenous vegetation, particularly regionally appropriate species	Restoration planting will only comprise locally sourced indigenous species.
iv. resource management practices that increase and strengthen the biodiversity of the Region	Restoration, enhancement and protection of indigenous vegetation and habitats is to be implemented.
v. restoration or rehabilitation of degraded or modified areas of indigenous vegetation and habitats of indigenous fauna.	Restoration, enhancement and protection of indigenous vegetation and habitats is to be implemented.
Through liaison with territorial authorities, other agencies and resource users advocate:	
vi. for the protection and creation of wildlife corridors	There is an existing corridor between coastal duneland and forest at the northern end of the property. Revegetation will create a terrestrial corridor across the entire property.
vii. the protection of the margins of lakes, rivers and coasts from inappropriate subdivision, use or development	No clearance or development will occur in coastal habitats.
viii. the avoidance of isolation or fragmentation of ecosystems	No vegetation clearance will occur.
2. Investigate, in conjunction with landowners and other agencies, alternative mechanisms for the sustainable management of indigenous vegetation.	Consultation with the Department of Conservation and other parties is ongoing.
3. Recognise the effects of structures and barriers in waterways on aquatic habitats, and in particular on the migration of aquatic fauna and avoid, remedy or mitigate adverse effects through regional plans and resource consents.	Restoration, enhancement and protection of indigenous vegetation and habitats is to be implemented. A small ford at the northern end of the property will be altered to improve passage for aquatic species.

Policy	Comments
4. Develop and maintain the Regional Pest Management Strategy in a manner which assists in the protection of biodiversity.	Pest animal and plant control is to be implemented.
5. Encourage resource users and interested parties to sign and act in accordance with voluntary accords, (e.g. the New Zealand Forest Accord) for the protection of indigenous vegetation and habitats of indigenous fauna.	Legal protection for part of the property is to be implemented.

Policy Two: Regionally Consistent Criteria for Use When Identifying Significant Areas

Implementation Methods:

Policy	Comments
Use a consistent approach throughout the Waikato region when identifying areas of significant indigenous vegetation and significant habitats of indigenous fauna.	Sites of significance were identified in 2010 (Kessels Associates 2010). No SNAs are to be affected.

Policy Three: Protection and Management of Indigenous Vegetation and Habitats of Indigenous Fauna

Implementation Methods:

Policy	Comments
Ensure the existing characteristics that identify natural areas as significant indigenous vegetation and/or significant habitats of indigenous fauna are protected in an appropriate way from adverse effects when using or developing natural and physical resources except:	
ii. where those effects cannot be avoided, in which case the effects are to be remedied or mitigated in such a way that biodiversity is maintained or enhanced, having particular regard to the specific characteristics that identify the area as significant.	No indigenous vegetation is to be cleared.
Subject to the exceptions in Policy Three A), once an area has been identified as being significant, the following factors should be taken into account when determining protective management methods including the allocation of resources:	
i. positive landowner management initiatives	Ecological management of the property is to be implemented.
ii. current uses	All of the areas within the property currently grazed (and of low ecological value) will be retired. The area will be revegetated with indigenous species or left to follow natural successional processes.
ii. relative significance (based on the characteristics that make an area significant)	Ecological management of the property is designed to enhance all indigenous vegetation and habitats for indigenous fauna.
v. threats to the characteristics that make the area significant (including relative vulnerability to threats)	Legal protection, retirement from grazing, pest animal control, pest plant control, and restoration and enhancement of the area will lessen or remove threats to indigenous vegetation and indigenous habitats.
v. the effectiveness of management options to address threats	An Ecological Management Plan is to be provided.
vi. availability of resources	
ii. the use of non-regulatory methods.	

WAIKATO REGIONAL PLAN

The proposed development compliance with Policies in the Waikato Regional Plan have been assessed in the table below.

Table 3-3: Provisions in the Waikato Regional Plan relevant to the proposed subdivision at Wainuiototo Farm, Whangapoua.

Relevant Provisions	Comments
8 Information Requirements	
8.1 Assessment Criteria and Information Requirements	
8.1.1 General Information Requirements for all Applications	
Any application for a resource consent must, as a minimum, include the following:	
d. An assessment of any actual or potential effects (including cumulative effects), on the environment, and the way in which adverse effects may be mitigated (see Fourth Schedule of the RMA for matters which should be included).	An assessment of effects is included in this report.
f. Where it is likely that any activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity.	Methods to avoid or minimise any effects are addressed in this report.
h. The way in which any adverse effects will be avoided, remedied or mitigated.	Methods to avoid or minimise any effects are addressed in this report.
8.1 Assessment Criteria and Information Requirements	
8.1.4 Land and Soil	
8.1.4.1 Soil Disturbance, Roading and Tracking, Vegetation Clearance and Riparian Vegetation Clearance	
c. Description of the topography, soil type and vegetation.	Addressed in this report.
d) What effects the activity will have on the environment including:	
i. the potential effects on soil erosion, slope stability, adjacent water bodies and water quality,	There will be no adverse effects.
the extent to which the activity will adversely affect areas of significant indigenous vegetation and significant habitats of indigenous fauna,	There will be no adverse effects.
f. The method of vegetation clearance to be used.	N/A

OPERATIVE THAMES-COROMANDEL DISTRICT PLAN

All proposed house sites are within the 'Coastal Zone Outside All Policy Areas' of the Operative District Plan. Relevant policies in the Operative Thames-Coromandel District Plan are assessed the table below.

Table 3-4: Policies in the Operative Thames-Coromandel District Plan relevant to the proposed subdivision at Wainuiototo Farm, Whangapoua.

212.4 Policies	Comments
1. To ensure the outstanding natural features and landscapes of the District are protected from inappropriate subdivision, use and development.	Refer to the Landscape and Visual Assessment.
2. To ensure the natural character of the coastal environment including	Refer to the Landscape and Visual Assessment. All areas within natural character overlays are to be

212.4 Policies	Comments
outstanding natural features and landscapes are preserved and protected from inappropriate subdivision, use and development.	protected.
3. To encourage and provide for appropriate development, which will remedy or mitigate the adverse effects of past land uses and enhance the natural character and amenity values of the coastal environment.	Most of the property is to be revegetated.
4. To promote the restoration and enhancement of existing degraded natural features and landscapes.	Most of the property is to be revegetated.
5. To ensure activities or development provide suitable long term protection of outstanding and other identified natural features and landscapes and where appropriate enhancement of natural character, features and landscapes of an area.	Most of the property is to be revegetated.
6. To recognise the landscape values within the natural, cultural and built environments of the District's towns, villages and countryside.	A landscape and visual assessment has been undertaken for this application.
7. To recognise and provide for existing land use activities while avoiding, remedying and mitigating any adverse effects of those activities on outstanding landscapes.	All of the areas currently grazed within the property will be retired. The area will be largely revegetated with indigenous species.

PROPOSED THAMES-COROMANDEL DISTRICT PLAN

Policies in the Proposed Thames-Coromandel District Plan are assessed in the table below.

Table 3-5: Objectives and policies in the Proposed Thames Coromandel District Plan relevant to potential development at Wainuiototo Farm, Whangapoua.

SECTION 6: BIODIVERSITY	Comments
6.3 OBJECTIVES AND POLICIES	
Objective 1: Indigenous biodiversity is maintained, restored or enhanced at the time of subdivision, use and development.	
Policy 1a Subdivision, use and development shall:	
a) Retain the ecological sustainability and natural characteristics of indigenous vegetation; and	All indigenous vegetation is to be protected.
b) Minimise earthworks within and adjacent to areas of indigenous vegetation; and	All indigenous vegetation is to be protected.
c) Locate buildings, structures and accesses outside of areas of indigenous vegetation; and	All indigenous vegetation is to be protected.
d) Apply buffers around land use activities to minimise adverse effects on areas of indigenous vegetation; and	All indigenous vegetation is to be protected. Most of the balance of the property is to be revegetated.
e) Avoid the introduction of pest species and introduced predators into habitats where	An Ecological Management Plan will address a pest control programme, pest plant management, and

SECTION 6: BIODIVERSITY	Comments
nationally threatened and at risk fauna and flora live; and	revegetation of most of the property.
f) Maintain, enhance or restore the functioning of ecological corridors and linkages, wetlands and dune systems; and	Existing corridors are to be protected and there will be extensive indigenous revegetation.
g) Consider ongoing management of priority locations mapped in Section 38 Subdivision, including legal protection, restoration, enhancement, pest control and stock exclusion.	- An Ecological Management Plan will address a pest control programme, pest plant management and revegetation of the property. - Legal protection is to be provided. - Stock will be entirely excluded from the property.
Policy 1b: Where subdivision, use and development will result in the clearance of indigenous vegetation, the clearance should be undertaken in a way that:	
a) Retains the viability, integrity and sustainability of indigenous habitats and species; and	All indigenous vegetation is to be retained, and enhanced.
b) Does not increase the risk to nationally at risk and threatened species; and	No Threatened or At Risk species will be placed at risk.
c) Maintains the function of ecological corridors; and	This will occur.
d) Does not increase natural hazard risk (including erosion and flooding); and	N/A
e) Does not adversely affect wetland and dune ecosystems and their buffers.	The property has a large area of coastal escarpment and dunelands; and these areas will not be affected.
Policy 1c: Subdivision for restoration or enhancement of indigenous biodiversity shall be considered in the Rural Area where indigenous biodiversity is increased, and protected in legal perpetuity, by one or more of the following:	
a) Restoring or enhancing priority locations mapped in Section 38 Subdivision, identified for protection;	All indigenous vegetation and habitats are to be protected and enhanced.
b) Establishing mountain to sea corridors of terrestrial and aquatic ecosystems;	**Revegetation will extend existing corridors.**
c) Reconnecting fragmented ecosystems (on land and via waterways);	Revegetation of the property will include creation of a new corridor across much of the property.
d) Establishing buffers to an underrepresented or threatened indigenous ecosystem;	Coastal cliffs currently provide a buffer between the active sand dunes and stable sand dunes (which are classified as 'Endangered' (Holdaway and Wiser 2012) and land development. No development will occur in these areas.
e) Creating an ecological stepping stone or corridor to link indigenous vegetation;	There is an established corridor between coastal environments and inland forest at the northern end of the property.
f) Maintaining or enhancing habitat for nationally at risk and threatened flora and fauna;	An Ecological Management Plan will address a pest control programme, pest plant management and revegetation to enhance all indigenous vegetation and habitats within the property.
g) Restoring or enhancing indigenous habitats adjoining wetlands, rivers, springs, coastal cliffs, dunes, estuaries and fragmented forests;	An Ecological Management Plan will address restoration and enhancement of indigenous habitats and revegetation and natural succession of areas currently grazed.
h) Establishing self-sustaining pest free areas;	Pest management is to be established.
i) Restoring or enhancing rare ecosystems.	Enhancement of the coastal environment is going to be implemented.
Policy 1e: Subdivision, use and development in the Coastal Environment shall avoid adverse effects on:	

SECTION 6: BIODIVERSITY	Comments
a) Indigenous taxa listed as 'Threatened' or 'At Risk' in the New Zealand Threat Classification System lists or taxa listed as threatened by the International Union of Nature and Natural Resources; and	NZ dotterel and Pīngao (At Risk-Declining) are the only recorded At Risk or Threatened species in the area. Dune habitat for these species will not be affected. Control of pests and weeds is to be undertaken.
b) Habitats of indigenous species where the species are at the limit of their natural range, or are naturally rare; and	Not relevant.
c) Areas containing nationally significant examples of indigenous community types; and	Not relevant.
d) Indigenous ecosystems and vegetation types that are threatened in the Coastal Environment, or are naturally rare; and	Active sand dunes and stable sand dunes, - such as those that occur at Wainuiototo - are classified as 'Endangered' (Holdaway and Wiser 2012). These areas will not be affected.
e) Areas set aside for full or partial protection of indigenous biological diversity under legislation.	No legally protected areas are currently present on this property. Future legal protection is proposed.

SECTION 7 COASTAL ENVIRONMENT
7.2 ISSUES
1. The protection, preservation, restoration and enhancement of the special values and characteristics of the Coastal Environment need to be carefully balanced with meeting people's inherent interest in using the Coastal Environment as a place to work, live and play.
7.3 OBJECTIVES AND POLICIES
Objective 1 Subdivision, use and development in the Coastal Environment:
• Maintains the integrity, form, functioning and resilience of the Coastal Environment; and
• Preserves the natural character, natural features and landscape values of the Coastal Environment; and
• Recognises the relationship of tāngata whenua with the Coastal Environment; and
• Maintains and enhances public open space and recreation opportunities in the Coastal Environment; and
• Manages coastal hazard risks; and
• Protects and enhances historic heritage values

POLICIES		
The policies relating to the above objective are found in the following sections of the Plan:		
Section 6	Biodiversity	Consdierable biodiversity enhancement is to occur.
Section 8	Historic Heritage: Archaeological sites, Māori Cultural Sites, Heritage Items	Addressed in a separate assessment.
Section 9	Landscape and Natural Character	Addressed in a separate assessment.
Section 10	Natural Hazards	Not relevant to this assessment
Section 15	Settlement Development and Growth	Not relevant to this assessment
Section 16	Subdivision	Ecological effects are addressed in this assessment
Section 17	Tāngata Whenua	Not relevant to this assessment

9.3 OBJECTIVES AND POLICIES **Within the Outstanding Landscape Overlay** **Objective 1**

Outstanding Landscapes remain outstanding and their values and characteristics are protected from inappropriate subdivision, use and development and resulting adverse cumulative effects.	
Policy 1a	
Subdivision, use and development shall avoid adverse effects on Outstanding Landscapes and maintain the values and characteristics of Outstanding Landscapes by:	
a) Being visually unobtrusive; and	A landscape and visual assessment has been undertaken for application.
b) Not dominating the landscape and landform; and	A landscape and visual assessment has been undertaken for application.
c) Retaining existing areas of indigenous vegetation cover; and	Legal protection for a large area of the property is proposed.
d) Protecting prominent landscape features from disturbance; and	A landscape and visual assessment has been undertaken for application.
e) Not obscuring natural features visible from public land; and	A landscape and visual assessment has been undertaken for application.
f) Minimising earthworks as far as practicable, and revegetating any earthworks as soon as possible; and	All earthworks will be subject to immediate revegetation.
g) Minimising light spill; and	A landscape and visual assessment has been undertaken for application.
h) Avoiding visual 'scars'; and	A landscape and visual assessment has been undertaken for application.
i) Following natural contours; and	A landscape and visual assessment has been undertaken for application.
j) Providing public access through subdivision to public land, the coast, and esplanade reserves and strips alongside rivers, where access to these areas is not yet provided.	Not relevant to this assessment.

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