

# ASSESSMENT OF ECOLOGICAL EFFECTS OF A PROPOSED PLAN CHANGE FOR 48 ESMONDE ROAD, TAKAPUNA

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*Pōhutukawa overhanging a bank at the coastal and terrestrial boundary of the proposed development.*

## **Contract Report No. 5000c**

May 2022

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# 1. INTRODUCTION

KBS Capital Ltd (the client) is proposing a Private Plan Change to allow the development of a commercial and residential precinct at 48 Esmonde Road, Takapuna. If approved, the Precinct Plan will allow for taller buildings in the centre of the site than envisaged under the current Auckland Unitary Plan (AUP) zoning and provide an esplanade reserve.

Wildland Consultants Ltd prepared an assessment of the existing ecological values of the site in 2019 to accompany the resource consent application for the first stage of works at the site (Wildland Consultants Ltd 2019). This assessment was based on the development being undertaken under the current zoning rules. An updated assessment of the potential adverse ecological effects of the proposed plan change is now required.

To this end, the client has requested an updated assessment of the ecological values of the site, together with an assessment of the potential adverse ecological effects of the proposed plan change provisions. Additionally, measures to avoid, remedy or mitigate any potential adverse ecological effects, and to enhance the ecological values of the site are provided.

## 2. ECOLOGICAL CONTEXT

### 2.1 Overview

The property at 48 Esmonde Road is located within the Tāmaki Ecological District, which encompasses the heavily urbanised Auckland isthmus between the Manukau and Waitematā harbours, the former North Shore City, and the lowlands of Waitākere. The North Shore is the most vegetated section of the Tāmaki Ecological District. While it covers just 21 percent of the land area, it contains 49 percent of the indigenous forest and scrub present within the Ecological District (Myers 2005). The biodiversity of the North Shore is considered to be representative of New Zealand’s northern lowland ecosystems, which have been significantly reduced from their former extent as a consequence of human occupation and farming activities (Myers 2005). Despite the extent of human modification on the North Shore, some elements of its natural character have survived (Myers 2005).

### 2.2 Soils

Underlying geology in the area is composed of sandstones of the Waitematā Group (Ballance 1976). Soils are largely clay and are likely to be nutrient poor and podzolised on ridges where kauri (*Agathis australis*) once dominated. Damp, shaded gullies are likely to have richer soils due to litter deposition by abundant broadleaved species.

### 2.3 Pre-human vegetation

The pre-human vegetation of the North Shore is likely to have comprised kauri, tānekaha (*Phyllocladus trichomanoides*), and hard beech (*Fuscospora truncata*) on upper valley walls, ridges and spurs, and taraire (*Beilschmiedia tarairi*), tawa (*B. tawa*), and kohekohe (*Dysoxylum spectabile*) in sheltered coastal and inland valleys, with some rimu (*Dacrydium cupressinum*) and nīkau (*Rhopalostylis sapida*) also present. The vegetation in lower valleys is thought to have predominantly comprised kahikatea (*Dacrycarpus dacrydioides*), mataī (*Prumnopitys taxifolia*), pūriri (*Vitex lucens*), and pukatea (*Laurelia novae-zelandiae*). On steep coastal slopes, whau (*Entelea*

*arborescens*), mangeao (*Litsea calicaris*), houpara (*Pseudopanax lessonii*), pōhutukawa (*Metrosideros excelsa*), karo (*Pittosporum crassifolium*), and tawapou (*Planchonella costata*) are believed to have dominated. Moist alluvial soils are likely to have supported kahikatea forest, and in the wet, fertile areas, pukatea, swamp maire (*Syzygium maire*), kiekie (*Freycinetia banksii*), and *Gahnia xanthocarpa* would have flourished (Myers 2005). Harakeke (*Phormium tenax*), raupō (*Typha orientalis*), and sedges are likely to have occurred mainly in marshy places or on the borders of forests. Pre-European vegetation in Auckland following land clearance by Māori is likely to have been predominantly mānuka (*Leptospermum scoparium*) and kānuka (*Kunzea robusta*) scrub with bracken (*Pteridium esculentum*).

## 2.4 Remaining indigenous vegetation

Only 6.9 percent of the Tāmaki Ecological District remains in indigenous vegetation cover (Lindsay *et al.* 2009). The project area is situated in an ‘At Risk’ Land Environment, i.e., 20-30 percent indigenous vegetation cover remaining at a national scale (Walker *et al.* 2007).

## 2.5 Fauna

Indigenous forest remnants and suburban gardens in the Tāmaki Ecological District provide habitat for common bird species such as riroriro (grey warbler; *Gerygone igata*), tauhou (silveryeye; *Zosterops lateralis*), and pīwakawaka (North Island fantail; *Rhipidura fuliginosa placabilis*). Species such as tūi (*Prosthemadera novaeseelandiae*) and kererū (*Hemiphaga novaeseelandiae*) are more common in larger forest remnants. Ruru (morepork; *Ninox novaeseelandiae*) occurs in indigenous and exotic forest, and in open country or suburban gardens with areas of mature trees (Heather & Robertson 2000). Pekapeka (long-tailed bat; *Chalinolobus tuberculatus*), classified as ‘Threatened-Nationally Critical’ by O’Donnell *et al.* (2018), have been recorded on the fringes of the Tāmaki Ecological District where it meets the Waitākere, Rodney, and Hunua Ecological Districts.

The Auckland region is a biodiversity hotspot for seabirds with 80 species recorded from the Hauraki Gulf and Waitematā and Manukau harbours (Sawyer & Forbes 2013). The intertidal flats in the Waitematā and Manukau harbours provide important feeding habitat for international migratory wading birds species such as lesser knot (*Calidrus canutus rogersi*) and kuaka (eastern bar-tailed godwit; *Limosa lapponica baueri*), national migrant species such as wrybill (*Anarhynchus frontalis*), and resident species such as poaka (pied stilt; *Himantopus himantopus leucocephalus*) and tūturiwhatu (Northern New Zealand dotterel; *Charadrius obscurus aquilonius*). The Manukau Harbour represents one of the most important wintering grounds for wading birds in New Zealand and the south-west Pacific and the number of waders in Manukau Harbour both in summer and winter can reach c.40,000 individuals.

Skinks and geckos are present on beaches and in shrubland and forest habitats. Threatened species include ornate skink (*Oligosoma ornatum*), Pacific gecko (*Dactylocnemis pacificus*), forest gecko (*Mokopirikirau granulatus*), and elegant gecko (*Naultinus elegans elegans*), all of which are classified as ‘At Risk-Declining’ by Hitchmough *et al.* (2016).



A diverse range of aquatic fauna species occur in Tāmaki Ecological District, including species classified as ‘Threatened’ and ‘At Risk’ by Dunn *et al.* (2018). These include īnanga (*Galaxias maculatus*; ‘At Risk-Declining’), longfin eel (*Anguilla dieffenbachii*; ‘At Risk-Declining’), and the non-threatened banded kōkopu (*G. fasciatus*), redfin bully (*Gobiomorphus huttoni*), Cran’s bully (*G. basalis*), and shortfin eel (*A. australis*).

## 2.6 Local context

The site is located in Takapuna, in the southern part of the Tāmaki Ecological District. The current land use includes Harbourside Church, the Harbourside Kids Childcare Centre, a car park complex, and associated lawns and gardens. The site margins comprise coastal forest covering a steep bank abutting the Waitematā Harbour. The forest varies in width between 10-25 metres and covers an area of approximately 0.9 hectares. The land surrounding the site is largely characterised by dense urban development, roading infrastructure, light industry, and mangrove (*Avicennia marina*)-dominated estuaries of the Waitematā Harbour. All land within the proposed development lies within an ‘At Risk’ land environment (20-30% indigenous vegetation cover left) as described by Walker *et al.* (2007).

## 3. PROPOSED PRECINCT PLAN

The site is within the ‘Residential - Terrace Housing and Apartment Buildings’ (THAB) Zone under the Auckland Unitary Plan (AUP). The THAB zone allows for high-intensity urban residential living in the form of terrace housing and apartments predominantly around metropolitan, town and local centres.

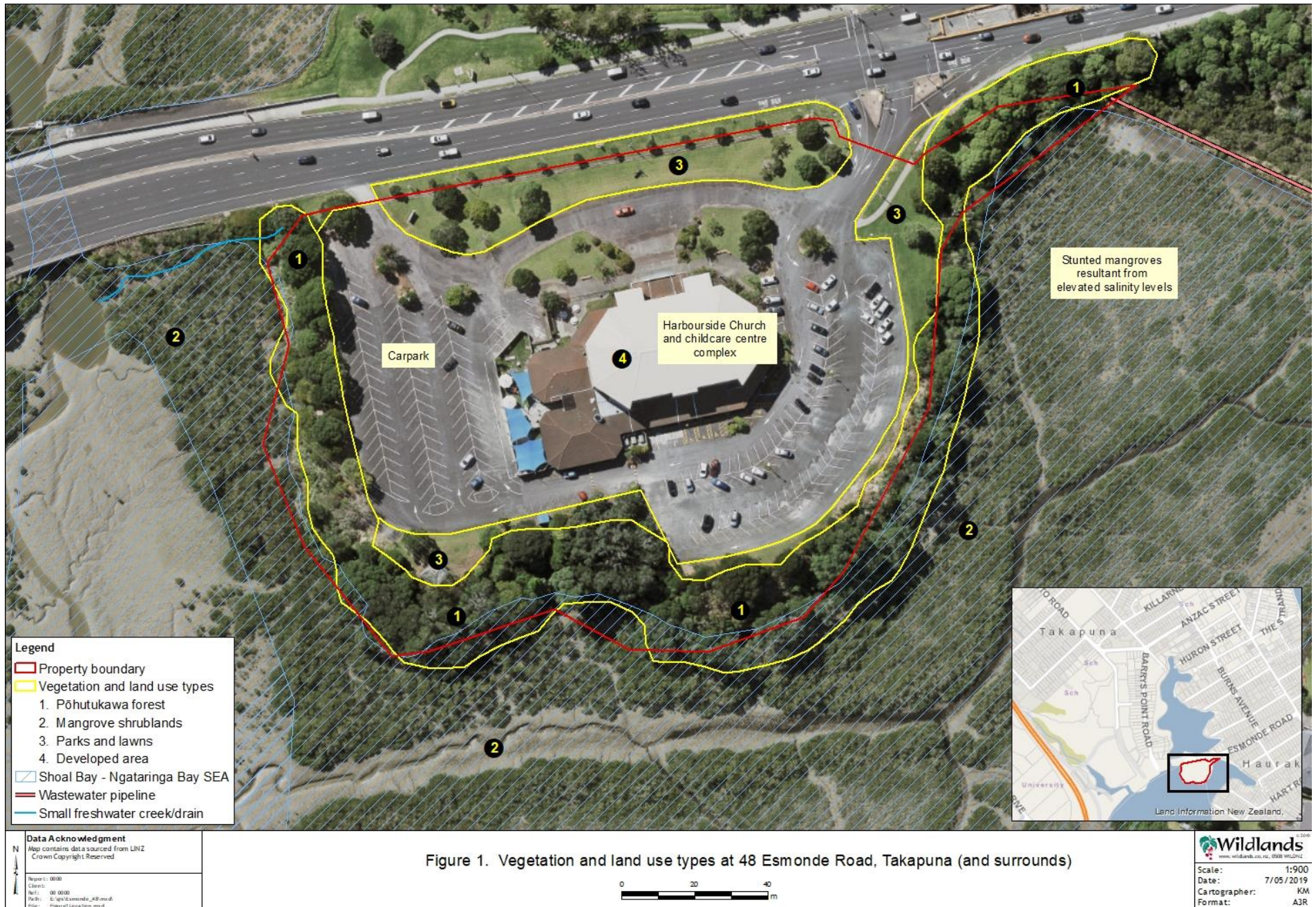
The current application does not seek to change the zoning of most of the site. Rather, a Precinct Plan overlay is being sought to allow additional building height throughout the site. The THAB zone allows for buildings up to seven stories and the Precinct Plan application seeks permission for buildings up to 16 stories in height. In addition, the Precinct Plan will allow for some minor non-residential activities and the rezoning of a 20-metre esplanade reserve as an ‘Open Space’ zone. The Precinct Plan also facilitates the provision of a future coastal boardwalk at the edge of the site and a potential pedestrian connection through to Francis Street.

It is noted that any works within the esplanade reserve would be subject to the provisions of the Open Space - Conservation zone. Any works below Mean High Water Springs Tide Mark would be subject to the requirements of the Coastal Plan.

## 4. METHODS

### 4.1 Desktop review

A literature review was undertaken to identify any relevant information relating to the ecological values of the site, including the ecological context of the site and surrounds. Fauna record databases held by the Department of Conservation and Auckland Council were searched to assess fauna species that may be present, while the Significant Ecological Area (SEA) overlay of the AUP provided guidance on the ecological values of surrounding environments.



## 4.2 Vegetation and habitat survey

The site was visited on 16 April 2019 and 7 April 2021. An ecological assessment focussing predominantly on the coastal forest was conducted starting at the northwestern border of the site and continuing around the base of the forest to the south, east and then north. The forest was also surveyed from the upper bank. Vegetation characteristics were delineated and digitised onto aerial imagery using ArcGis10.8 (Figure 1). Representative photographs were taken, and all plant species (vascular and non-vascular) observed were recorded (Appendix 1).

In order to describe wading and shore bird habitat in the area surrounding the site, a shell bank approximately 400 metres south-west of the site was accessed via an informal walkway at the end of Charles Street (Figure 2).

## 4.3 Fauna survey

Targeted fauna surveys were beyond the scope of this assessment, however, the suitability of the vegetation at and adjacent to the site to provide habitat for key indigenous fauna species was assessed and all fauna species observed at the site were recorded. Fauna species for which habitat values were specifically considered include (but are not limited to):

- Forest gecko
- Elegant gecko
- Copper skink (*Oligosoma aeneum*)
- Ornate skink
- Kuaka
- Tūturiwhatu
- Moho-pererū (banded rail; *Gallirallus philippensis assimilis*)



**Legend**

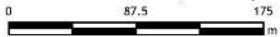
- Property boundary
- Access to shell bank from Charles Street
- Banded rail footprints April 2019
- Wading bird habitat

1. Intertidal mudflats/open water
2. Shell bank
3. Mangroves
4. Reedland and rushland

**Data Acknowledgment**  
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Report: 5000c  
 Client:  
 Ref: 06 1383  
 Path: L:\GIS\Esmonde\_48.mxd  
 File: 5000c\_Figure2\_WadingBirds.mxd

**Figure 2. Wading and shore bird habitat close to 48 Esmonde Road, Takapuna**



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Scale: 1:3,500  
 Date: 15/04/2021  
 Cartographer: KM  
 Format: A3

## 5. VEGETATION AND HABITAT TYPES

### 5.1 Historical overview

Historic aerial imagery (Google Earth Pro) shows that most of the headland has been clear of indigenous vegetation since at least 1963, at which time a small housing complex and extensive lawns occupied what is now the Harbourside Church, child centre and carpark (Figure 1). The coastal forest is likely to have been continuously forested over at least the last 62 years (Plate 1a). The coastal forest borders an area of mangroves and inter tidal flats. The mangrove canopy cover and overall extent has increased over the last five decades as a response to both natural infilling of sediments into the Waitematā Harbour and sediment deposition exacerbated by clearance of vegetation in surrounding catchments (Plate 1b).



Plate 1a: Historic aerial imagery from 1963 of the proposed development site.



Plate 1b: Satellite imagery from 2017 of the proposed development site. Note expansion of mangroves, principally driven through exacerbated rates of sediment deposition as a result of vegetation clearance in the catchment.

## 5.2 Pōhutukawa forest

The coastal forest is classified as ‘WF4-Pohutukawa, pūriri, broadleaved forest’ under the Auckland ecosystem classification (Singers *et al.* 2017). It is characterised by a number of large emergent pōhutukawa lining the top and bottom banks (Plate 2) with frequent clumps of pampas (*Cortaderia jubata*), tree privet (*Ligustrum lucidum*) and bamboo (*Pseudosasa japonica*). A relatively high number of broadleaved indigenous species were recorded and occupy the mid sections of the forest, including karaka (*Corynocarpus laevigatus*), pūriri, tarata (lemonwood; *Pittosporum eugenioides*), and whauwhaupaku (five finger; *Pseudopanax arboreus*), although such associations did not form extensive or exclusive tracts. Some sections of the forest floor are covered exclusively by the pest plant species periwinkle (*Vinca major*).



Plate 2: Pōhutukawa lining the top of the coastal forest along the western bank. 16 April 2019.

The top bank of the eastern forest is dominated by pampas and tree privet, while the area around the pylon in the southwestern corner of the site largely comprises bracken. There is evidence of garden waste dumping along the top margins, while some overhanging bush along the coastal-fringe at the bottom of the bank has been cut back, possibly to facilitate access to trap lines set for pest animals by the Auckland Council.

There is a section along the bottom of the forest which retains relatively high natural character formed by large mature pōhutukawa overhanging coastal cliff faces and cave features interposed with a number of indigenous species such as wharawhara (*Astelia banksii*) and leather-leaf fern (*Pyrrhosia elaeagnifolia*) (Plate 3).



Plate 3: Pōhutukawa overhanging the coastal margin along the western perimeter.  
16 April 2019.

### 5.3 Mangrove shrubland

Mangroves along the western, southern and eastern borders of the forest where they border tidal creeks are generally in good ecological condition and grow to about three metres tall (Plate 4). Taller growing vegetation is attributed to freshwater influx, both from tidal feeder creeks and ground and surface water seepage percolating through the headland's permeable sandstone geology. In contrast, mangroves bordering the northeastern forest are stunted and exhibit signs of stress (Plate 5). This is most likely a result of inadequate tidal flushing, which can lead to elevated salinity levels and hampers key physiological process such as water exchange.



Plate 4: Mangrove and coastal immortality grass along the western terrestrial-coastal site boundary (foreground). Note emergent pōhutukawa canopy and pampas in the background on the terrestrial margin. 16 April 2019.



Plate 5: Stunted mangroves transitioning to glasswort herbfield in zones of less tidal inundation. Pampas lines the terrestrial boundary which is formed by the presence of a wastewater pipeline running adjacent to the northeastern site boundary. 16 April 2019.



Intertidal soils are covered in mangrove pneumatophores and, in patches of the littoral zone, by Neptune's necklace (*Hormosira banksii*) (Plate 6). The terrestrial-intertidal boundary is marked by a transition from mangroves to glasswort (*Salicornia quinqueflora*), wīwī (sea rush; *Juncus kraussii* subsp. *australiensis*), coastal immortality grass (*Austrostipa stipoides*), and mākaka (saltmarsh ribbonwood; *Plagianthus divaricatus*), particularly along the northeastern margin where tidal elevation gradients are more pronounced (Plate 5).



Plate 6: Neptune's necklace growing within the littoral zone amongst mangrove pneumatophores. 16 April 2019.

#### 5.4 Aquatic habitats

There is a small intermittent watercourse flowing from the northwestern border of the site into adjacent mangroves (Figure 1). The watercourse is shallow and in poor ecological condition. Thick pampas and other exotic weeds line the banks and rubbish and litter are evident within the watercourse.

## 6. FLORA

Thirty-four indigenous species and 13 exotic plant species were recorded during the survey (Appendix 2).

Three indigenous species (kānuka, pōhutukawa, and aka) have recently had their threat classifications raised to 'Threatened - Nationally Vulnerable' by de Lange *et al.* (2018). This is a precautionary measure due to the threat that myrtle rust (*Austropuccinia australis*) poses to species in the myrtle family. No other indigenous species recorded are classified as nationally or regionally threatened (de Lange *et al.* 2018 and Stanley *et al.* 2005).

## 7. FAUNA

### 7.1 Avifauna

Forty-three indigenous and 21 introduced bird species have been recorded in the eBird and iNaturalist databases within a radius of approximately one kilometre of the property, based on a search of records undertaken on 30 April 2021. Table 1 lists the indigenous species and their threat rankings as per Robertson *et al.* (2017).

Table 1: Indigenous bird species recorded within one kilometre of the site. Data obtained from the eBird and iNaturalist databases.

Common Name	Scientific Name	Status (Robertson <i>et al.</i> 2017)
Australasian gannet	<i>Morus serrator</i>	Not Threatened
Australian coot	<i>Fulica atra australis</i>	At Risk - Naturally Uncommon
Banded dotterel	<i>Charadrius bicinctus bicinctus</i>	Threatened - Nationally Vulnerable
Banded rail	<i>Gallirallus philippensis assimilis</i>	At Risk - Declining
Black shag (kawau)	<i>Phalacrocorax carbo novaehollandiae</i>	At Risk - Naturally Uncommon
Black swan	<i>Cygnus atratus</i>	Not Threatened
Black-billed gull	<i>Larus bulleri</i>	Threatened - Nationally Critical
Caspian tern	<i>Hydroprogne caspia</i>	Threatened - Nationally Vulnerable
Eastern bar-tailed godwit	<i>Limosa lapponica baueri</i>	At Risk - Declining
Grey duck	<i>Anas superciliosa</i>	Threatened - Nationally Critical
Grey duck ´ mallard hybrid	<i>Anas superciliosa x Anas platyrhynchos</i>	Not Threatened
Grey warbler (riroriro)	<i>Gerygone igata</i>	Not Threatened
Kererū; kūkupa; New Zealand pigeon	<i>Hemiphaga novaeseelandiae</i>	Not Threatened
Little black shag	<i>Phalacrocorax sulcirostris</i>	At Risk-Naturally Uncommon
Little shag (kawaupaka)	<i>Phalacrocorax melanoleucos</i>	Not Threatened
Morepork (ruru)	<i>Ninox novaeseelandiae novaeseelandiae</i>	Not Threatened
Muscovy duck	<i>Cairina moschata</i>	Introduced, not established
New Zealand dabchick	<i>Poliiocephalus rufopectus</i>	At Risk - Recovering
New Zealand pipit	<i>Anthus novaeseelandiae novaeseelandiae</i>	At Risk - Declining
New Zealand scaup	<i>Aythya novaeseelandiae</i>	Not Threatened
North Island fantail (pīwakawaka)	<i>Rhipidura fuliginosa placabilis</i>	Not Threatened
Northern New Zealand dotterel	<i>Charadrius obscurus aquilonius</i>	At Risk - Recovering
Paradise shelduck (pūtangitangi)	<i>Tadorna variegata</i>	Not Threatened
Pied shag	<i>Phalacrocorax varius varius</i>	At Risk-Recovering
Pied stilt	<i>Himantopus Himantopus leucocephalus</i>	Not Threatened
Pūkeko	<i>Porphyrio melanotus melanotus</i>	Not Threatened
Red-billed gull (tarāpunga)	<i>Larus novaehollandiae scopulinus</i>	At Risk - Declining
Reef heron	<i>Egretta sacra sacra</i>	Threatened - Nationally Endangered
Royal spoonbill	<i>Platalea regia</i>	At Risk - Naturally Uncommon
Sacred kingfisher (kōtare)	<i>Todiramphus sanctus vagans</i>	Not Threatened
Shining cuckoo	<i>Chrysococcyx lucidus lucidus</i>	Not Threatened
Silvereye (tauhou)	<i>Zosterops lateralis lateralis</i>	Not Threatened
South Island pied oystercatcher	<i>Haematopus finschi</i>	At Risk - Declining
Southern black-backed gull (karoro)	<i>Larus dominicanus dominicanus</i>	Not Threatened
Spotless crane	<i>Porzana tabuensis tabuensis</i>	At Risk - Declining

Common Name	Scientific Name	Status (Robertson <i>et al.</i> 2017)
Spur-winged plover	<i>Vanellus miles novaehollandiae</i>	Not Threatened
Swamp harrier (kāhu)	<i>Circus approximans</i>	Not Threatened
Tūī	<i>Prosthemadera novaeseelandiae novaeseelandiae</i>	Not Threatened
Turnstone	<i>Arenaria interpres</i>	Migrant
Variable oystercatcher	<i>Haematopus unicolor</i>	At Risk - Recovering
Welcome swallow	<i>Hirundo neoxena neoxena</i>	Not Threatened
White-faced heron	<i>Egretta novaehollandiae</i>	Not Threatened
White-fronted tern	<i>Sterna striata striata</i>	At Risk - Declining

Five indigenous bird species were seen or heard at the property during the field surveys undertaken on 16 April 2019 and 7 April 2021:

- Tūī (Not Threatened)
- Pīwakawaka/fantail (Not Threatened)
- Tauhou/silvereeye (Not Threatened)
- Kōtare/New Zealand kingfisher (*Todiramphus sanctus vagans*) (Not Threatened)
- Tarāpunga/red-billed gull (*Chroicocephalus novaehollandiae scopulinus*) (Threatened - Nationally Vulnerable)

Five indigenous bird species were observed on tidal flats and the shell bank accessed from Charles Street, Hauraki on 7 April 2021:

- Kuaka/eastern bar-tailed godwit (At Risk-Declining)
- Tūturiwhatu/Northern New Zealand dotterel (Threatened - Nationally Vulnerable)
- Tōrea/variable oystercatcher (*Haematopus unicolor*) (At Risk - Recovering)
- Poaka/pied stilt (Not Threatened)
- Karoro/southern black-backed gull (*Larus dominicanus dominicanus*) (Not Threatened)

During a separate survey undertaken by Wildland Consultants on 17 April 2019<sup>1</sup>, mohopererū/banded rail (At Risk - Declining) footprints were observed c.35 metres to the south of the site in mangrove shrubland (Figure 2).

Three exotic bird species were observed at the site:

- Common house sparrow (*Passer domesticus*)
- Indian myna (*Acridotheres tristis*)
- Eurasian blackbird (*Turdus merula*)

## 7.2 Herpetofauna

No lizards were observed during either site visit; however, coastal vegetation at the site provides potential habitat for indigenous skinks. There are records of indigenous copper skink, ornate skink, and forest gecko within three kilometres of the site. Ornate skink and forest gecko are classified as 'At Risk - Declining' under the New Zealand threat classification for reptiles (Hitchmough *et al.* 2016). All indigenous lizards are fully protected under the Wildlife Act (1953).

<sup>1</sup> Wildland Consultants Ltd 2019: Ecological Assessment of the Proposed Francis Street to Esmonde Road Link, Takapuna, Contract Report No. 5006.

Exotic plague skink (*Lampropholis delicata*) may be present. This species is an “Unwanted Organism” under the Biosecurity Act (1993).

### 7.3 Mangrove associated invertebrates

A number of invertebrate species commonly associated with New Zealand mangroves were recorded, including the rock oyster (*Crassostrea glomerata*), barnacles (*Elminius modestus*), mud snail (*Amphibola crenata*), cockle (*Austrovenus stutchburyi*) and the tunnelling mud crab (*Helice crassa*).

## 8. ECOLOGICAL VALUES

The coastal pōhutukawa forest has a canopy of indigenous tree species with a mixture of indigenous and exotic species in the understorey. Trapping for invasive animal species conducted by the Auckland Council has been carried out in an effort to improve the habitat quality for indigenous fauna. Although the indigenous plant species identified are all relatively common in the Auckland region, there is less than 3% of coastal forest habitat remaining (Lindsay *et al.* 2009). Accordingly, coastal vegetation dominated by pōhutukawa (WF4) has a regional IUCN threat status of ‘Endangered’ as per Singers *et al.* (2017). Additionally, there is an area of high-quality natural coastal character worthy of preservation where large mature pōhutukawa overhang a section of steep bank.

The mangrove shrubland immediately abutting the proposed development site has been designated as the Shoal Bay - Ngataranga Bay SEA under the AUP (2016). This SEA has been identified as an important feeding and roosting area for a number of coastal birds, including taranui (Caspian tern; *Hydroprogne caspia*), tūturiwhatu, poaka, white-faced heron (*Egretta novaehollandiae*), and kōtare. The coastal vegetation is also recognised as an outstanding example of a saline community and includes ecotone sequences from mangroves to saltmarsh and salt meadow through to shell banks and *Bolboschoenus* sp./raupō wetlands. Coastal pōhutukawa forest remnants also occur on the fringes of Shoal Bay and Ngataranga Bay (AUP 2016), including the proposed development site.

## 9. POTENTIAL ADVERSE ECOLOGICAL IMPACTS AND OPTIONS TO AVOID, REMEDY OR MITIGATE

### 9.1 Overview

The proposed plan change will allow for taller buildings to be constructed in the centre of the site and for an esplanade reserve to be created. In this respect given, the present THAB zoning of the site, it is not considered that the plan change would result in any materially greater ecological effects than the current site zoning. It is noted that any future walkway connection to Francis Street would be subject to further resource consent requirements in terms of the Open Space zoning or the Coastal Plan. As such, these proposed structures will be subject to a detailed assessment of effects at the appropriate design stage.

There is a range of Auckland wide rules that will serve to manage the construction and earthworks effects of the Plan Change. In particular, all development will be subject to sections E11 Land disturbance - Regional and E12. Land disturbance - District.

No indigenous vegetation will be cleared from the proposed esplanade reserve and the reserve will protect the pōhutukawa forest around the coastal fringe in perpetuity. Vegetation located within the development area of the site will be removed for the plan change as per the approved resource consent.

Potential adverse effects of the proposed plan change can be summarised as:

- Effects on indigenous fauna
- Stormwater and sediment effects
- Effects on the coastal environment

Each of these effects is described in detail below. As this report is based on a concept plan accompanying a plan change application, the magnitude of each potential adverse effect is currently unknown. The development design will be adapted as necessary to minimise or avoid potential adverse effects as much as possible.

## 9.2 Effects on indigenous avifauna

### 9.2.1 Effects of construction and ongoing use of site

Following granting of consent, noise and movement associated with construction may disturb or temporarily displace some avifauna species. The Plan Change enables more built form on the site and thus construction activity might be anticipated to occur over a longer duration by comparison to the existing position – however, construction will remain a temporary effect. For terrestrial birds, these effects are likely to be minimal, as the species present are all common and mobile and are likely to move back to the area following the completion of works.

Moho-pererū have been recorded within 32 metres of the site in mangrove forest and, although not observed, wading birds such as kuaka are likely to use intertidal mudflats close to the site for foraging. Moho-pererū use saltmarsh, reedland, and rushland habitats for nesting and roosting. There is no saltmarsh habitat immediately adjacent to the site and the closest nesting and roosting habitat for moho-pererū is 300 metres to the east (Figure 2). It is expected that any moho-pererū displaced from foraging in the adjacent mangrove areas would return once construction is complete.

It is unlikely that construction will disturb wading birds in their foraging habitats. The wading birds observed from the shell bank (Section 7.1) are unlikely to nest or roost in habitats at or adjacent to the site. The shell bank (approximately 400 metres southeast of the site) provides valuable habitat for wading birds, both as nesting habitat for tūturiwhatu and a high tide refuge for tōrea, kuaka, and tūturiwhatu. The shell bank is far enough away from the site that it is considered highly unlikely that construction will have any negative impacts on this habitat. People and pets accessing the shell bank from Charles Street (Figure 2) are likely to have a far greater impact on nesting and roosting birds than any construction works.

### 9.2.2 Bird strike and disorientation

Manmade structures and artificial lighting can be detrimental to various bird species as they can disorientate or provide strike hazards. Light pollution, particularly at night (Blue-Light Aotearoa, n/d; National Light Pollution Guidelines 2020), and reflection off windows or reflective surfaces can greatly attract and disorientate birds (Bird-Friendly Best Practise: Glass 2016). Many wading birds spend time inland at various

times of the year and have no difficult flying overland to various sites (Dowding and Moore 2006). The proposed 16 storey high building may therefore provide a strike hazard for various bird species, including wading birds.

Reflective surfaces can be used to help a building blend into the surrounding landscape. However, the reflective surface of the windows will provide reflections of vegetation, landscape and sky, which can result in birds not identifying the hazard. Slow flying species may have more opportunity to take evasive manoeuvres when flying than fast-flying species. If a bird is attracted to a reflective surface, however, the flight style will not aid any avoidance behaviour. Migratory birds or juveniles are at a greater risk, while mature birds that commonly reside in the area may learn to recognise the hazard. Lighting and reflection at night may also greatly impact birds that fly at night (National Light Pollution Guidelines 2020).

Several mitigation measures can be implemented to reduce bird strikes. Many bird species can see ultraviolet (UV) light, and the use of nano UV-reflective coatings or patterns on windows can greatly help to prevent bird strikes without detracting from human vision (Dey 2021). By dip-coating or heat-treating glass panels, the UV reflectance of glass can be as high as 27.8%, significantly affecting a bird's vision and potentially reducing bird-strike incidences. Alternatively, reducing the area of glass and or installing awnings, screens, grilles, shutters, and sunshades will break up the large areas with visual cues for birds to identify a hazard (Bird-Friendly Best Practise: Glass 2016).

### 9.2.3 Effects of increased lighting

Interior and exterior lighting can have a significant effect on attracting or disorientating birds. Adopting some or all of these measures during building design will minimise the risk of bird strike resulting from increased lighting:

- All internal lights should be downward facing with minimal horizontal spill, and external lights should be shielded with no horizontal spill (National Light Pollution Guidelines 2020).
- Window screens and tinted windows can reduce light being seen at night by birds. Vegetation should be planted to screen roosting and breeding areas from the building (National Light Pollution Guidelines 2020).
- Lighting should only be used as necessary and at a low intensity.
- The spectral range should avoid lights rich in blue light (400 – 500 nm).

### 9.2.4 Construction of possible boardwalk

The potential pedestrian connection to Francis Street (Section 3) will could cause disturbance to moho-pererū if it passes through mangroves. The design of this connection has not been finalised and a full assessment of potential ecological impacts and mitigation measures will be prepared when resource consent for the connection is applied for. A preliminary Ecological Impact Assessment of options for the proposed crossing was undertaken by Wildland Consultants Ltd in 2019 (Wildland Consultants 2019). The following text is taken from Wildlands (2019):

*“The overall design for the pathway will ensure that wherever possible the pathway crosses the terrestrial-marine ecotone at a right angle to minimise the foot print in these areas. By keeping the boardwalk away from the shoreline, habitat continuity will be*

*retained for species that roost and nest on the coastal edge and forage in adjacent mudflat and mangrove habitats.*

*It is not expected that the loss of mangroves from the area below the boardwalk will adversely impact the use of foraging habitat by banded rail. Banded rail prefer to forage beneath a canopy of mangrove forest and shrubland. The existing canopy and the cover provided by the boardwalk (once completed) affords a protected environment under which banded rail are expected to move freely from one side to the other. A similar style boardwalk at Tangitarori North, Tairua, runs parallel to the shore at the outer seaward extent of the mangrove forest. At this site banded rail have been observed foraging on both sides of the boardwalk and their footprints are commonly found in the mud directly beneath it (Tim Martin, Wildland Consultants Ltd, pers. obs.).”*

Wildlands (2019) concluded that by carefully designing the boardwalk to avoid the higher diversity of vegetation and habitat types along the coastline, such as saltmarsh vegetation and brackish watercourses, the adverse ecological effects of the proposed pathway are likely to be no more than minor.

### 9.2.5 Summary

The area surrounding the site is already subject to high levels of disturbance from existing residential developments and roading. Provided steps are taken to minimise the risk of bird strike, it is considered unlikely that additional buildings at the site will cause any additional disturbance to avifauna following construction. If the proposed connection to Francis Street is constructed, it should be designed to avoid saltmarsh vegetation and brackish watercourses. An updated Ecological Impact Assessment will be undertaken when plans for the connection are finalised.

## 9.3 Effects on indigenous herpetofauna

No vegetation clearance is proposed and therefore there are unlikely to be any adverse effects on herpetofauna. There is currently no artificial debris at the site which could potentially support copper skinks.

## 9.4 Stormwater and sediment effects

Works at the site have the potential to discharge sediment into the coastal environment. The potential adverse impacts of sedimentation can be managed through following best-practice sediment control measures and rehabilitating any disturbed habitats once works are complete. A sediment and erosion control plan must be approved by council before earthworks take place and should be consistent with the recommendations outlined in ‘TP90 Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region’ or ‘GD2016/005 - Erosion and Sediment Control Guide for Land Disturbing activities in the Auckland Region’ (whichever is operative at the time of work being taken).

Stormwater can also transport a range of contaminants such as heavy metals, which accumulate in estuarine receiving environments. Heavy metals such as zinc can persist in the aquatic environment for considerable periods of time, particularly in sediment. As a consequence, metals can accumulate in the tissues of benthic organisms and their predators at higher trophic levels. Zinc is toxic to aquatic plants and animals (Widianarko *et al.* 2001). In residential areas, contamination can also occur through activities such as washing cars on impermeable surfaces, whereby cleaning chemicals and detergents are readily transported into drains and into aquatic and estuarine

receiving environments. In order to prevent zinc entering the local watercourses, galvanised iron should not be used in the proposed development.

Under the proposed Precinct Plan, a requirement for Stormwater Management Plans (SMP) has been proposed to manage the effects of stormwater from the site. This includes stormwater quality. The precinct plans in particular include the following objective and associated policy:

*“(13) The adverse effects of stormwater runoff within the precinct are mitigated to maintain water quality and preserve the mauri of the Waitemata Harbour.”*

The following standard is also proposed:

*“1552.6.7. Stormwater*

*Purpose: To ensure that stormwater in the precinct is managed and, where appropriate, treated, to ensure the health and ecological value of streams are maintained.*

*(1) All land use development shall be managed in accordance with an approved Network Discharge Consent and/or Stormwater Management Plan certified by the Stormwater network utility operator.”*

All further development will be subject to a resource consent which will ensure that proposal provide suitable stormwater mitigation to ensure that the actual or potential effects on stormwater can be suitably managed.

## 9.5 Effects on the Coastal Environment

The Precinct Plan also facilitates the provision of a future coastal boardwalk along the edge of the site and a potential pedestrian connection through to Francis Street.

It is noted that any works within the esplanade reserve would be subject to the provisions of the Open Space - Conservation zone. Any works below Mean High Water Springs Tide Mark would be subject to the requirements of the Coastal Plan. The Unitary Plan is considered to include sufficient controls to manage the actual or potential effects of the proposed walkway. A full assessment of the potential adverse ecological impacts of the boardwalk and pedestrian connection will be undertaken when consent applications are submitted. With appropriate mitigation, it is anticipated that the adverse ecological impacts of these structures will be less than minor.

## 9.6 Summary

The potential adverse effects on all avifauna species are considered to be temporary in duration and less than minor in magnitude and therefore no mitigation is proposed. No effects on indigenous herpetofauna or on the coastal environment are expected as a result of stormwater flows and sedimentation. The Precinct Plan facilitates the provision of a coastal walkway and potential pedestrian crossing to Francis Street, and with appropriate mitigation it is anticipated that the potential adverse effects of these structures will be less than minor.

Overall, implementation of the proposed precinct is considered to have less than minor potential adverse ecological effects. Establishing and restoring the proposed esplanade reserve (Section 11) will increase the ecological values of the site. As such,



implementing the proposed plan change is likely to result in a net ecological benefit to the site.

## 10. NATIONAL ENVIRONMENTAL STANDARDS FOR FRESHWATER MANAGEMENT (2020)

The National Environmental Standards for Freshwater Management (NES-FW) came into effect in 2020. The proposed Precinct Plan has been assessed under the provisions of the NES-FW and consent will not be required given that there are no wetlands present and no stream reclamation is proposed.

## 11. OPPORTUNITIES FOR ECOLOGICAL ENHANCEMENT

Restoration of the proposed esplanade reserve through pest plant control and infill planting of appropriate indigenous species will enhance the overall ecological values of the site. Pest animal control could also be undertaken to improve regeneration of indigenous plant species and improve habitat for indigenous fauna.

## 12. CONCLUSIONS

The client is proposing a private plan change to allow the development of a commercial and residential precinct at 48 Esmonde Road, Takapuna. If approved, the Precinct Plan will allow for taller buildings in the centre of the site than envisaged under the current Auckland Unitary Plan (AUP) zoning, and provide an esplanade reserve.

Most of the site has very low ecological values. Pōhutukawa forest around the coastal margin of the site has high ecological value and this will be protected within a proposed esplanade reserve. The reserve offers the opportunity to enhance the ecological values of the site through pest plant and animal control and infill planting.

Potential adverse ecological effects of the development allowed by the proposed plan change have been identified as:

- Effects on indigenous fauna
- Stormwater and sediment effects
- Effects on the coastal environment

With the exception of the potential for bird strike, all potential adverse effects on indigenous fauna are considered to be temporary in duration and less than minor, and therefore no mitigation is required. Adopting bird-friendly glass and lighting measures will minimise the risk of bird strike. No effects on coastal environments or herpetofauna are anticipated.

Overall, implementing the proposed Precinct Plan will result in a net increase in the ecological values of the site.

## ACKNOWLEDGMENTS

Abu Hoque (KBS Capital Ltd) provided client liaison and site plans. Michael Campbell (Campbell Brown Ltd) and Jeremy Brabant (Brabant Barristers) provided comments on the draft report.

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## LIST OF VASCULAR AND NON-VASCULAR PLANT SPECIES RECORDED

### INDIGENOUS SPECIES

#### Gymnosperms

*Podocarpus totara* tōtara

#### Monocot. trees and shrubs

*Cordyline australis* tī kōuka, cabbage tree

*Phormium tenax* harakeke, flax

*Rhopalostylis sapida* nikau

#### Dicot. trees and shrubs

*Avicennia marina* subsp. *australasica* mānawa, mangrove

*Corynocarpus laevigatus* karaka

*Cotoneaster glaucophyllus* cotoneaster

*Hebe stricta* var. *stricta* koromiko

*Kunzea robusta* kānuka

*Meliccytus ramiflorus* māhoe

*Metrosideros excelsa* pōhutukawa

*Myrsine australis* māpou, matipou, māpau

*Pittosporum crassifolium* karo

*Pittosporum eugenioides* tarata, lemonwood

*Plagianthus divaricatus* mākaka, saltmarsh ribbonwood

*Pseudopanax arboreus* whauwhaupaku, five finger

*Sophora microphylla* kowhai

*Vitex lucens* pūriri

#### Dicot. Lianes

*Metrosideros perforata* aka

#### Ferns

*Asplenium flaccidum* s.s. makawe

*Diplazium australe*

*Doodia australis* pukupuku, prickly rasp fern

*Nephrolepis cordifolia* tuber ladder fern

*Pteridium esculentum* rārahu, bracken

*Pyrrhosia elaeagnifolia* leather-leaf fern

#### Grasses

*Gahnia lacera* cutty grass

*Austrostipa stipoides* coastal immorality grass

## Sedges

*Machaerina sinclairii*

## Rushes

*Juncus kraussii* subsp. *australiensis* sea rush

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

*Astelia banksii* wharawhara

## Dicot. herbs (other than composites)

*Salicornia quinqueflora* glasswort

## Non-Vascular

*Hormosira banksia* Neptune's necklace, sea grapes

*Usnea* spp. lichen

*Parmotrema* spp. lichen

## **NATURALISED AND EXOTIC SPECIES**

### Gymnosperms

*Cupressus macrocarpa* macrocarpa

### Dicot. trees and shrubs

*Acacia dealbata* silver wattle

*Acacia melanoxylon* Tasmanian blackwood

*Ligustrum lucidum* tree privet

*Polygala myrtifolia* sweet pea shrub

*Quercus ilex* oak

*Solanum mauritianum* woolly nightshade

*Tecomaria capensis* Cape honeysuckle

*Trachycarpus fortunei* fan palm

*Ulex europaeus* gorse

### Dicot. lianes

*Vinca major* periwinkle

### Grasses

*Cortaderia jubata* purple pampas

*Pseudosasa japonica* bamboo

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

*Asparagus scandens* climbing asparagus



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