REPORT

Tonkin+Taylor

# Preliminary Assessment of Terrestrial and Wetland Ecological Values and Potential Effects of the Proposed Te Araroa Barging Facility

**Prepared for**
HEB Construction Ltd
**Prepared by**
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# 1 Introduction

This report presents a summary of the key terrestrial and wetland ecological values of the area proposed for the barge facility at Te Araroa as identified from the preliminary ecological investigation, and identifies the potential effects that the proposed barging facility might have on ecological values. Opportunities to manage or address any effects are also discussed.

The findings presented in this report are preliminary only. If the barge facility proposal proceeds to consent level design, then more in-depth field assessment of ecological values and determination of effects will need to be undertaken to enable an appropriate mitigation, offset and compensation package to be developed.

# 2 Background

Crown Infrastructure Partners (CIP) have provided funding to Te Rimu Trust to design and consent a barge port in Te Araroa on the East Cape of the North Island to support local industries and communities and stimulate economic growth. The barge port will enable logs, timber products, aggregate and other products sourced on the East Cape to be exported to other coastal ports, notably Tauranga or Gisborne. The barge port will also enable potential aquaculture opportunities. The preliminary concept for the barge port involves an excavated mooring basin within the back-dune connected to deeper water with a dredged access channel protected by breakwaters.

As well as its use for commercial exports, the mooring basin will provide public recreational facilities such as a beach, water sports (waka ama), boat ramp and berthing for recreational vessels, as well as a rescue centre for Coastguard. This recreational area will be separated from the commercial operations. A walkway/cycleway is planned to connect the facility to the settlement of Te Araroa which is located several hundred metres to the east of the proposed barge port.

The preliminary concept of the proposed barge facility which has been used as the basis for this assessment is shown in Figure 2.1 below.

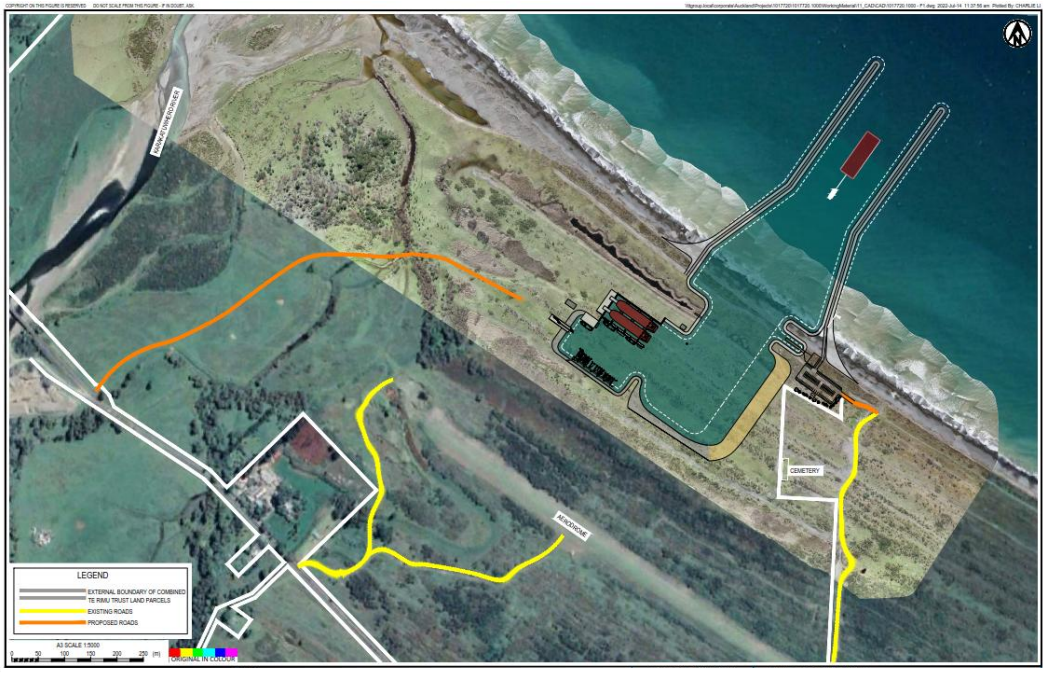


*Figure 2.1: Preliminary barge concept*

# 3 Methodology

This assessment has been prepared through a combination of desktop reference review and walk-over site observation. Much of the information gathered on the geographical features and ecological values of the site and adjacent areas has been obtained from three Boffa Miskell reports undertaken in 2019[1], 2020[2] and 2021[3]. Fauna databases were also searched for records of indigenous fauna species recorded at the site.

A site walk-over to verify ecological features including wetland location and vegetation types was undertaken in May 2022 by Tonkin & Taylor personnel and Te Rimu Trust representatives. The location of obvious and likely wetland areas was recorded, and photos taken of the vegetation growing in and adjacent to these areas. No specific flora or fauna surveys were undertaken. In addition, the area and nature of wetland likely to be affected or lost as a result of the Project has been determined.

The information gathered during the site walk-over was cross-referenced with recent high resolution and historical aerial images of the site.

# 4 Site ecological values

## 4.1 Site description

The area proposed for the barge facility consists of a series of well-defined gravel dune ridges that lie parallel to the existing coastline. Further inland the dune ridges flatten to form the stony floodplain of the Karakatūwhero River.

Some of the depressions between the coastal gravel ridges have formed into wetlands. The wetland area, which lies across the Te Rimu Trust and adjacent properties, is known as Te Whare Wetland and is mapped as a regionally significant wetland system by Gisborne District Council (GDC). One Boffa Miskell[1] report states that the wetlands were likely to have formed as a result of an artesian groundwater aquifer upwelling on the flat floodplain and/or retention of water in old channels. The report states that because of the mobility of the environment, the location of the wetlands is likely to change regularly in response to mobility of the river-bed and mouth and associated changes in groundwater hydrodynamics.

## 4.2 Vegetation

The wetlands on Te Rimu Trust's property are well defined between the dune ridges. The larger wetland areas have dense stands of raupō (*Typha orientalis*), bamboo spike sedge (*Eleocharis sphacelata*), and *Machaerina rubiginosa* that include some areas of flax (*Phormium tenax*). Some have areas of open water. The shallower margins of the wetland areas consist of rushes including marsh clubrush (*Bolboschoenus fluviatilis*), swamp twig rush (*Machaerina juncea*), jointed twig rush (*Machaerina articulata),* sedges (giant umbrella sedge (*Cyperus ustulatus*), pukio (*Carex virgata*), spike sedge (*Eleocharis acuta*), swamp millet (*Isachne globosa*), native willow weed (*Persicaria decipiens*), water purslane (*Ludwigia palustris*) and water milfoil (*Myriophyllum propinquum*)[2].

[1] Boffa Miskell, 2019. Land Assessment Report. Whenua Maori Fund report prepared for Te Rimu Trust.

[2] Boffa Miskell, 2020. Te Rimu Trust. Proposed Aerodrome - Assessment of Ecological Effects Prepared for Te Rimu Trust.

[3] Boffa Miskell, 2021. Te Araroa Coastal Infrastructure. Issues, Values and Management Options Analysis of the Te Rimu Trust Property.

Generally, a two to four metre wide vegetated riparian margin occurs around the edge of the larger wetland areas. This margin includes sedges (*Carex flagellifera, Carex virgata, Cyperus ustulatus*), coprosma species (*Coprosma rhamnoides*, *Coprosma propinqua, Coprosma robusta*), swamp kiokio (*Parablechnum minus*), and native willow weed (*Persicaria decipiens*). Some margins have a canopy of crack willow (*Salix fragilis*) or kānuka (*Kunzea robusta*). The wetlands are not fenced and can be damaged by livestock.

The dune ridges between the wetlands are vegetated with grazed pasture grasses and weed species including kikuyu grass, wild carrot (*Daucus carota*), foxglove (*Digitalis purpurea*), woolly mullein (*Verbascum virgatum*), gorse (*Ulex europaeus*), pampas (*Cortaderia spp*), cotoneaster (*Cotoneaster glaucophyllus*), inkweed (*Phytolacca octandra*), Chinese privet (*Ligustrum sinense*), tree lucerne (*Cytisus proliferus*), fig (*Ficus carica*), boxthorn (*Lycium ferocissimum*), sweet briar (*Rosa rubiginosa*), orange firethorn (*Pyracantha angustifolia*) and blackberry (*Rubus fruticosus*). Exotic shrub cover increases in density with distance from the coast.

Indigenous species are not common on the dune ridges but kānuka is scattered singly and in clumps and soft mingimingi (*Leucopogon fasciculatus*), prickly mingimingi (*Cyathodes juniperina*) and mingimingi (*Coprosma propinqua*) occur in low numbers in association with the kānuka. Scattered pōhuehue (*Muehlenbeckia complexa),* karo (*Pittosporum crassifolium*), māpou (*Myrsine australis*), tauhinu (*Ozothamnus leptophyllus*) and dwarf mingimingi (*Leucopogon fraseri*) also occur in these areas.

None of the plant species recorded at the site are classified as threatened under the New Zealand Threat Classification System (NZTCS) and none are listed in Schedule G7B of the Tairāwhiti Resource Management Plan (TRMP) of regionally and nationally rare or threatened species found in the Gisborne District.

## 4.3 Avifauna

GDC information suggests that Te Whare Wetland provides habitat for Australasian bittern (*Botaurus poiciloptilus*), marsh crake (*Zapornia pusilla),* spotless crake (*Zapornia tabuensi*) and North Island fernbird (*Poodytes punctatus*).[4]

Australasian bittern have the highest threat classification rating of "Nationally Critical", while marsh crake, spotless crake and fernbird are classified as "At Risk – Declining".

Banded dotterel (*Charadrius bicinctus bicinctus*) ("Threatened: Nationally Vulnerable") and pied stilt (*Himantopus himantopus*) (not threatened) have also been reported near the Karakatūwhero River mouth and adjacent shoreline.

## 4.4 Herpetofauna

No records of lizards have been found for the site, although it is possible that the gravel dunes may provide habitat for shore skink (*Oligosoma smithi;* threat status – "At Risk – Declining") and moko skink (*Oligosoma moco*; threat status – "At Risk – Relict").

Shore skink often utilise debris washed up onto the high tide mark as refugia, including driftwood and clumps of seaweed, while moko skink occur in coastal scrub and grassland.

[4] Boffa Miskell, 2020. Te Rimu Trust. Proposed Aerodrome - Assessment of Ecological Effects Prepared for Te Rimu Trust.

## 4.5 Invertebrates

The intertidal zone is likely to support a range of marine invertebrates including amphipods, crabs, and polychaete worms that in turn provide a food source for fish and birds. A Boffa Miskell report[5] has suggested the upper intertidal zone of the gravel beach at this site may provide appropriate habitat for the Threatened - Nationally Critical gravel maggot (*Smeagol climoi*). The gravel maggot is small air-breathing sea slug found in gravel habitat (>20cm deep) on beaches in central New Zealand and south-eastern Australia. While the gravelly habitat on site may be suitable for gravel maggots it is important to note that no gravel maggots have been found in the East Coast region to date. The two species of gravel maggot known to exist in New Zealand have only been found on gravelly beaches in the Wellington, Kaikōura and South Westland areas.

# 5 Potential ecological effects of construction and operation of the barge facility

## 5.1 Wetlands

The planned access channel to the proposed barge port will require the removal of some sections of dune wetland. Wetland vegetation will need to be removed to excavate the channel and the lateral aquifer that feeds these wetland areas from the west may be interrupted.

Three small areas of wetland are likely to be removed as a result of the construction of the barge facility. The three areas occupy an area of approximately 2030 $m^2$ (refer to the plan in Appendix A). All three wetland areas lie along the same dune depression and extend eastwards from the main wetland area (containing open water), at what appears to be the elevated end of the hydrological gradient.

The eastern most wetland area (Wetland 1; 635 $m^2$) and the middle wetland area (Wetland 2; 920 $m^2$) are degraded remnant wetland areas that have been previously damaged by grazing livestock and are not supported by water lying on the wetland surface. The ecological values (vegetation quality and habitat for fauna) of these two areas are low.

The third, most westward area of wetland that will be removed (Wetland 3; 475 $m^2$) is also degraded due to previous stock grazing, however, it is considered to have moderate ecological value because it is contiguous with the large area of wetland to the west and serves as a vegetated buffer at the eastern end of that wetland.

The main body of wetland that currently has sections of open water will not be directly affected by the proposed barge facility. There will, however, be some indirect effects on wetland fauna as a result of the construction and operations of the barge facility. Noise and light spill generated by barge operations will make the eastern end of this wetland area less favoured habitat for wetland avifauna unless it is well buffered by wetland margin planting to shield the barge area from the wetland.

[5] Boffa Miskell, 2021. Te Araroa Coastal Infrastructure. Issues, Values and Management Options Analysis of the Te Rimu Trust Property.

*Figure 5.1: View of Wetland 1 looking to the west. The wetland vegetation is predominantly raupo.*

*Figure 5.2: View looking south-west to Wetland 2. This vegetation is a mix of raupo and rushes.*

*Figure 5.3: View looking west at the eastern end of Wetland 3*

*Figure 5.4: View to the west of the main wetland area. This area is to the west of Wetland 3 and will not be directly affected by the construction of the barge facility. Open water exists in the middle of the raupo stand.*

Following the walk-over site assessment, there is no question that the dune wetland areas on the Te Rimu Trust land fit the description of a wetland under the National Environmental Standards for Freshwater 2020 (NES-F). The vegetation is predominantly comprised of recognised indigenous wetland species and the hydrological features are indicative of wetland habitat. The removal or alteration of wetlands is a prohibited activity under the NES-F unless the activity is considered to be specified infrastructure under the National Policy Statement for Freshwater Management 2020 (NPS-F). It is considered the proposed barge facility is specified infrastructure (see section 3.2 of Feasibility Assessment report). Provided the project fits the specified infrastructure provision then appropriate wetland offset will be required. This is discussed later in this report.

## 5.2 Terrestrial vegetation

Small areas of remnant indigenous terrestrial vegetation will need to be removed to construct the barge facility. While none of the species have a threat status and the area of indigenous vegetation that will need to be removed is not likely to be large, the terrestrial plant species form an important part of the dune ridge – gully complex (along with the wetland species) and will need to be offset preferably in conjunction with the dune wetland restoration.

## 5.3 Avifauna

Wetland bird species will be adversely affected by the loss of wetland habitat, the severance of some wetland areas and possible noise and light disturbance from the construction and operation of the facility. The extent of habitat loss and disruption will not be able to be determined until the design of the facility is confirmed and a detailed site survey is undertaken.

There may be some effects on coastal bird species, but these are expected to be minor.

## 5.4 Herpetofauna

To be conservative and in absence of any detailed site-specific survey work, it is assumed that both shore skink and moko skink are present in the detritus zone above the high tide mark and in amongst the indigenous shrub and small tree areas. Consequently, the project is assumed to have some impact on these species due to habitat loss.

If the project proceeds, it is recommended that all suitable lizard habitat is thoroughly searched in advance of any site disturbance and any lizards found are salvaged and relocated to suitable undisturbed habitat close to the impact site. This work should be supervised by an experienced herpetologist and a Department of Conservation Wildlife Authority will be required to undertake salvage and relocation work.

## 5.5 Invertebrates

While no gravel maggots have been recorded in the dune gravels at the site it is possible that they may be present. The distribution and ecology of the two known species of gravel maggot is not well known so it is recommended that a detailed site search for these animals is undertaken as part of a more detailed ecological impact assessment for the project.

Until the presence and abundance of gravel maggots at the site are determined it is not possible to estimate any potential effects of the project, however, if they are present any effects are likely to be directly related to the areas of habitat loss. As for lizards, it is recommended that if gravel maggots are discovered in the upper tidal zone, then a thorough search, salvage and relocation effort should occur prior to the disturbance of the site for construction. This work should be planned and supervised by an experienced invertebrate ecologist and any individuals found should be relocated to suitable adjacent dune gravels that are likely to remain undisturbed by the project.

# 6 Effects management

Assuming the removal of wetlands is able to be consented under the specified infrastructure provision of the NPS-F, the loss of wetland and the associated impact on the fauna that inhabit the wetlands and wetland margins will need to be addressed by offset or compensation. The gravel dune wetland habitat is uncommon, and any true offset would need to create or enhance equivalent habitat to that being lost. If this cannot be done, then residual effects will need to be addressed by compensation.

There are several gravel dune wetland areas on and adjacent to Te Rimu land that will not be directly affected by the project. Some of these sites have been degraded by grazing and other activities and would benefit from fencing, supplementary planting, weed removal and the establishment of a protective native shrub and small tree margin. Improvements to these degraded wetland sites would be suitable as offset sites for the loss of wetland habitat and disturbance to wetland bird species. The exact quantum required to achieve a no-net-loss outcome will not be known until a more detailed assessment of the areas that will be affected and the proposed offset sites are undertaken. However, based on the offset accepted by Environment Court decisions in recent years for other infrastructure projects where areas of wetlands were removed, the loss of 2030 $m^2$ of wetland is likely to require an offset area of up to 1.2 ha. Considerably more than 1.2 ha of remnant wetland areas exist on Te Rimu Trust land that would benefit from and be suitable for offset restoration.

There are also suitable terrestrial (non-wetland sites) to offset the potential impact of the project on terrestrial flora and fauna. The greatest ecological gain would be achieved if contiguous habitat could be restored from the upper tidal zone through the gravel dune system and extending back to the floodplain area. The value of restoration of this nature would be further enhanced if it could be linked to the riparian margins of a tributary to the east of the Karakatūwhero River. Restoration of a

contiguous zone, as described, by the re-establishment of original natural plant cover would also serve to protect the riverine supported shallow groundwater that provides the water supply to the dune wetlands.

Shore and moko skink (if present), coastal bird species, gravel maggots (if present) and other more common indigenous animal species would also benefit considerably if a contiguous area from the intertidal zone to beyond the hind dune area was fully restored and permanently protected.

# 7 Applicability

This report has been prepared for the exclusive use of our client HEB Construction Ltd, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

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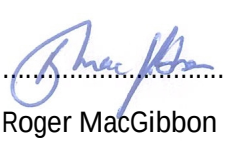
|  |  |
| ..... | ..... |
| Roger MacGibbon | Peter Millar |
| Principal Ecologist | Project Director |

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# Appendix A Plan of the proposed barge facility showing the location of the wetland areas that will be removed

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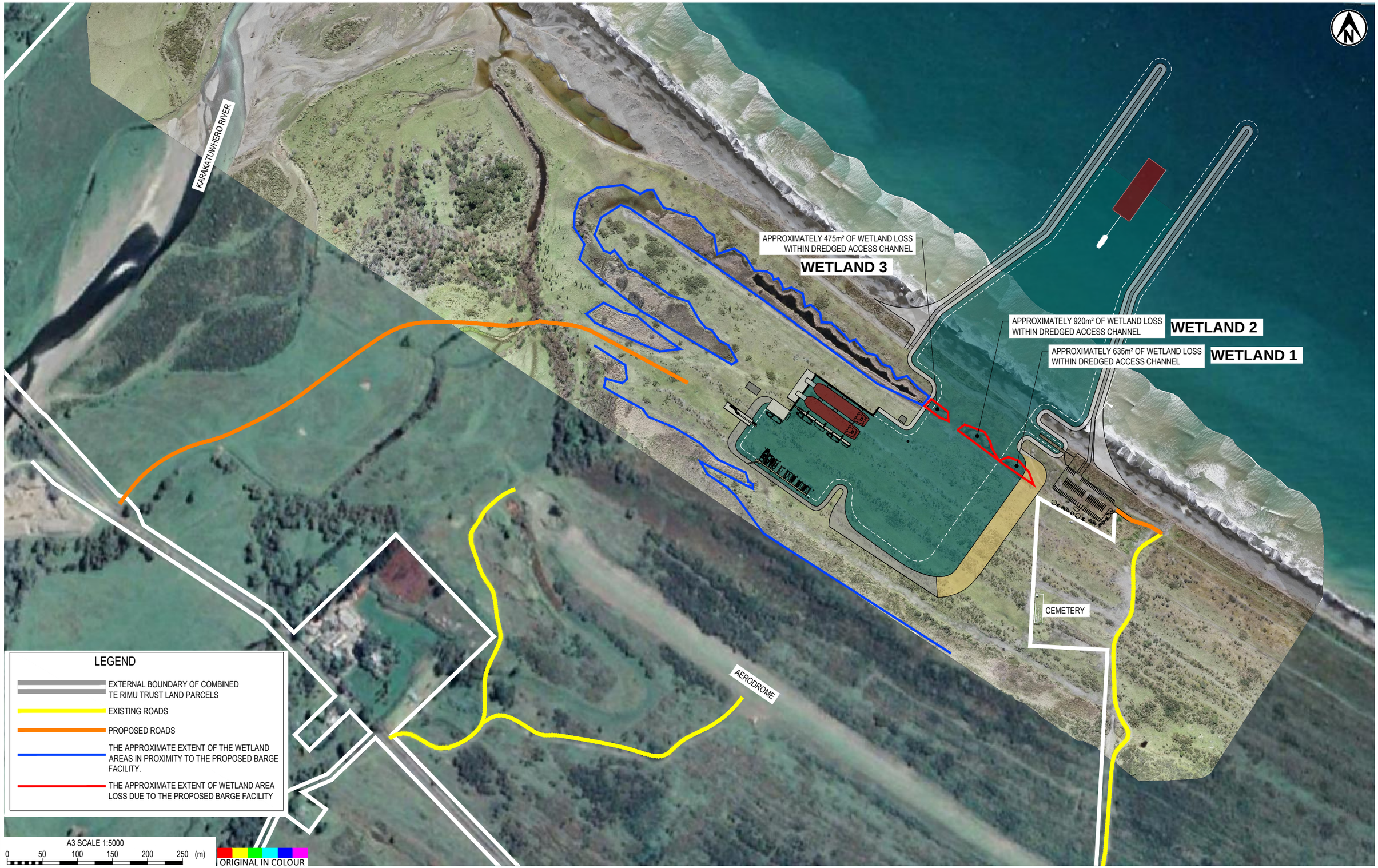


NOTES:

1. COORDINATE DATUM: NZGD2000, NEW ZEALAND TRANSVERSE MERCATOR (NZTM2000). LEVEL DATUM: LINZ (MSL) GISBORNE VERTICAL DATUM 1926
2. BASE IMAGE SOURCED FROM GOOGLE EARTH, IMAGE DATE 04/2021. HIGHER RESOLUTION IMAGE PROVIDED BY CIVIL ASSIST
3. BARGE FACILITY SHOWN ON T+T FIGURE HAS BEEN DESIGNED BY OFFSHORE AND COASTAL ENGINEERING LIMITED. T+T HAVE OVERLAID THIS DESIGN ONTO THE IMAGE PROVIDED BY CIVIL ASSIST FOR THE PURPOSE OF DEFINING THE EXTENT OF APPROXIMATE WETLAND AREAS IN PROXIMITY TO THE PROPOSED BARGE FACILITY.

Tonkin+Taylor

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| PROJECT No. | 1017720.1000 | |
| DESIGNED | HMJ | Jul.22 |
| DRAWN | CHLI | Jul.22 |
| CHECKED | RCH | Jul.22 |
| NOT FOR CONSTRUCTION | | |
| APPROVED | DATE | |

CLIENT **TE RIMU TRUST**

PROJECT **TE ARAROA PROPOSED BARGE FACILITY**

TITLE ECOLOGICAL FIELD WORK
APPROXIMATE EXTENT OF WETLAND AREAS

SCALE (A3) 1:5000 FIG No. FIGURE 2 REV 1

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