

Northport Eastern Expansion

Vegetation Assessment
Prepared for Northport Ltd

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CONTENTS

1.0	Introduction	1
2.0	Survey and Evaluation Methods	1
3.0	Site Description and Context	1
3.1	Waipu Ecological District	1
3.2	The Site	2
4.0	Ecological Significance	5
5.0	Assessment of Ecological Effects	7
6.0	Effects Management	8
7.0	Conclusion	9
8.0	References	9

1.0 Introduction

Northport proposes to expand its existing facilities to increase freight storage and handling capacity to support the future freight needs of the upper North Island. Works include earthworks to the immediate east of the existing facility to expand Northport's footprint, including 2ha of earthworks outside the Coastal Marine Area (on the Whangarei District Council esplanade reserve), a portion of which is duneland.

This report assesses the extent and ecological values of indigenous duneland vegetation present within the proposed works footprint, identifies ecological effects on vegetation communities associated with removal of the dune system, and provides recommendations with respect to options for mitigation.

2.0 Survey and Evaluation Methods

Information on the composition, ecological values and significance of coastal dune vegetation within the proposed development footprint and wider area was compiled from a review of existing literature including the Natural Areas of the Waipu District (Lux et al 2007) and online databases (iNaturalist NZ¹, NZ Plant Conservation Network² and the Australasian Virtual Herbarium³). A site walkover was undertaken on 7 March 2023, and the site description also incorporates observations from a recent botanical survey (Wright, 2023).

3.0 Site Description and Context

3.1 Waipu Ecological District

The Northport site is located at Marsden Point in Waipu Ecological District (ED), in Eastern Northland Ecological Region. The alluvial plains, estuaries and coastal dunelands of Marsden Point and adjacent Ruakaka are characteristic of Waipu ED. Lux et al. (2007) delineated significant duneland communities within the 23.5 km-long stretch of eastern coastline within Waipu ED. Ruakaka Dunelands (Q07/128) encompasses dune systems from the eastern side of Marsden Point to the northern side of the Waipu River, but does not include areas on the western side of Marsden point.

Historically, Waipu ED dune systems would have included pohutukawa forest communities on ancient, consolidated dune ridges, with more recent successional forest and pohuehue shrubland on stable rear dunes, and mobile dunes supporting extensive spinifex, pingao, and shore spurge interspersed with herbaceous and low woody species such as sand pimelea, sand coprosma, shore bindweed and *Austrofestuca littoralis*. Twig rushes, knobby clubrush, turf

¹ <https://inaturalist.nz/>

² <https://www.nzpcn.org.nz/>

³ <https://avh.chah.org.au/>

sedges (e.g., *Eleocharis neozelandica*) and salt meadow species (Bachelor's buttons, sea primrose, etc) would have been present in sheltered dune slacks.

The remnant dune system in the vicinity of the Northport site is reduced to a single foredune, as back dunes have been stabilised and converted to industrial land. Elsewhere along the eastern coastline, gorse and pampas now dominate large parts of the stabilised backdunes, interspersed with pohuehue shrubland and indigenous dune slack vegetation. Exotic grasses such as buffalo grass form dense swards on dune crests and more sheltered slopes, while native grasses persist and locally dominate on more mobile foredunes. Scouring and 'blowouts' were noted in places on foredunes around Ruakaka following recent storms, resulting in damage to some foredune vegetation communities.

3.2 The Site

3.2.1 Location and extent

The proposed works footprint encompasses a narrow section (approximately 360 m) of low-moderate energy sand dune and flats immediately eastward of the existing Northport site, and managed grass (car park, road and amenity area). The beachfront between the existing Northport site and the Marsden fuel terminal jetty is approximately 800 m in length, and the vegetated dune system here is restricted to a single crest between ~10 - 25 m wide. The area immediately behind this has been stabilised and grassed in kikuyu, with an irregular row of planted pohutukawa demarcating the extent of the dune (a few pines and Sydney golden wattle are also present). A carpark and vehicle accessway is situated between the dune and Marsden fuel terminal.

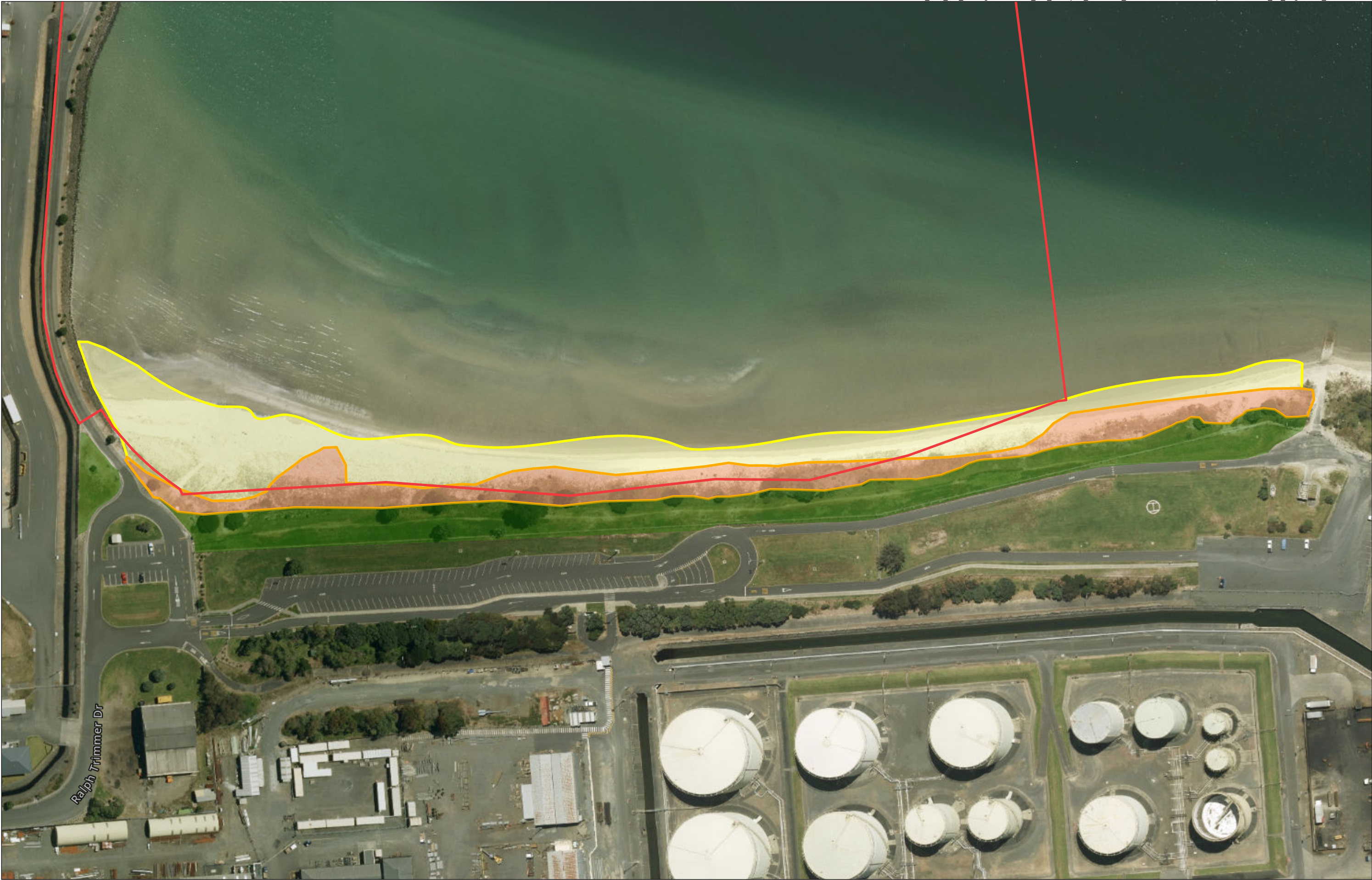
3.2.2 Vegetation composition

Vegetation cover on the dune system comprises two fairly distinct types. These are mapped in Figure 1 and described below. As shown in the map, vegetation types identified extend along the whole of the beachfront at Marsden Point, a portion of which is encompassed within the proposed works footprint.

- **Spinifex grassland**

Kōwhangatarā/ spinifex (*Spinifex sericeus*) dominates the vegetation cover across whole of the foredune generally between 10 – 15 m width, expanding out in to a broad ~25 m wide wedge at the western end of the beach where sand has accumulated following installation of the existing seawall (fig. 2-4). Spinifex forms a fairly close sward over most of this area (i.e., ~75% canopy cover), becoming sparser as it extends onto the sand flats near the strand line. Wīwī/ knobby clubbrush (*Ficinia nodosa*) and exotic herbaceous annuals (fleabane, dandelion, groundsel etc) and local patches of buffalo grass are sparsely present in more sheltered parts of the spinifex grassland.

Pīngao (*Ficinia spiralis*) was noted among the spinifex in a few locations within the proposed works footprint, including patches (10 – 20 m²) at the western end of the beach, one patch (~25 m²) near the middle of the site (fig. 6), and a few sparse tussocks towards the eastern end (fig. 7). Other patches observed were eastward of the proposed works extent. Pīngao has a conservation status of at risk – declining; (de Lange et al., 2018).



Some revegetation planting has previously been undertaken within the patch of spinifex grassland adjacent to the seawall and near the entry point to the beach, however some of the species planted (flax, karo, *Muehlenbeckia astonii*) are not appropriate to duneland environments and are generally in poor condition. Patches of knobby clubbrush and pīngao in this area are interspersed among plantings, and may also have originated as planted specimens.

- **Buffalo grass – pohuehue – spinifex sward**

A dense sward of exotic buffalo grass (*Stenotaphrum secundatum*) and native pohuehue (*Muehlenbeckia complexa*) covers the dune crest, both intermingled or in alternating single-species patches (figs 8, 9), while spinifex is interspersed through the seaward edge of this vegetation type as it grades into the foredune area (figs 3, 10). Buffalo grass and pohuehue both form a thick, matted cover along the dune crest and around the bases of wattles (several of which are dead) and conifer trees. Rank kikuyu is also locally abundant along the dune crest, and a number of “garden escape” weed species including smilax (*Asparagus asparagoides*), bushy asparagus (*A. aethiopicus*), agapanthus (*Agapanthus praecox*), ice plant (*Carpobrotus edulis*) and *Pelargonium graveolens* are present here.



Figure 2: Spinifex grassland



Figure 3: Buffalo grass grading into spinifex in buffalo grass– muehlenbeckia – spinifex sward



Figure 4: Exotic grassland on margin of spinifex grassland western end of site (scattered patches of pīngao in background)



Figure 5: mown verge (eastward of proposed works footprint)



Figure 6: Sparse pīngao midway along beach within proposed works footprint



Figure 7: ~5x5 m patch of pīngao toward eastern end of works footprint



Figure 8a, b: dense buffalo grass and pohuehue sward on dune crest.



Figure 9: dense pohuehue sward on dune crest.

Figure 10: *Spinifex* grading into buffalo grass and pohuehue sward on dune crest.

4.0 Ecological Features and Values

4.1 Proposed Northland Regional Plan

Rule D.2.18 (1) of the pNRP specifies that, in the coastal environment, activities must manage the adverse effects on indigenous biodiversity by:

- (a) avoiding adverse effects on:
 - (i) indigenous taxa that are listed as Threatened or At Risk in the New Zealand Threat Classification System lists, and
 - (ii) the values and characteristics of areas of indigenous vegetation and habitats of indigenous fauna that are assessed as significant using criteria in Appendix 5 of the Regional Policy Statement⁴,
 - (iii) areas set aside for full or partial protection of indigenous biodiversity under other legislation, and
- (b) Avoiding significant adverse effects and avoiding, remedying or mitigating other adverse effects on:
 - (i) areas of predominantly indigenous vegetation, and
 - (ii) habitats of indigenous species that are important for recreational, commercial, traditional or cultural purposes, and
 - (iii) Indigenous ecosystems and habitats that are particularly vulnerable to modification, including estuaries, lagoons, coastal wetlands, intertidal zones, rocky reef systems, eelgrass, northern wet heathlands, coastal and headwater streams, spawning and nursery areas and saltmarsh.

Appendix 5 of the pNRP specifies that an area of indigenous vegetation or habitat(s) of indigenous fauna is significant if it meets one or more criteria, these broadly comprising:

1. Representativeness,
2. Rarity and distinctiveness,
3. Diversity and pattern,
4. Ecological context.

⁴ <https://www.nrc.govt.nz/media/clxj0ndy/regionalpolicystatementfornorthlandmay2016updatedmay2018.pdf>

4.2 Ecological Evaluation

4.2.1 Presence of Threatened or At Risk flora

The Department of Conservation's New Zealand Threat Classification System (Townsend et al., 2008) provides a tool for assigning a national threat status to any taxa that exists in the wild in New Zealand. Native species for which sufficient data is available are classified as either "Threatened", "At Risk", or "Not Threatened", with a variety of sub-categories and qualifiers that provide additional information on each taxon.

Taxa are assessed as "Threatened" on the basis of small population size and/ or a small number of sub populations, *and* high rates of predicted decline.

Taxa that qualify as 'At Risk' do not meet the criteria for any of the 'Threatened' categories, but are either declining (though buffered by a large total population size and/or a slow decline rate), biologically scarce, recovering from a previously threatened status, or survive only in relictual population (a remnant of a population that was once widespread).

A small number of Pīngao plants are present within the proposed works footprint, and elsewhere along the adjacent foreshore. Pīngao is classified as "At Risk – Declining" in the latest threat classification of New Zealand plants (de Lange et al., 2018). It is in Category B(2), which contains taxa with a large population and low to moderate ongoing or predicted decline. Qualifiers assigned to pīngao are "PD" (Partial Decline), and "RR" (Range Restricted).

4.2.2 Significance Evaluation

Representativeness

The area of indigenous duneland vegetation within the proposed works footprint is modified, and of low diversity relative to characteristic duneland ecosystems, while approximately 50% of the vegetation cover within the works area is exotic. Notably, this portion of duneland was not identified as a significant natural area in the Department of Conservation survey of the Waipu Ecological District (Lux et al., 2007). In addition, the affected area is small in extent (the vegetated foredune strip is up to ~20 m wide, while the beachfront within and surrounding the site is ~800 m; the works footprint encompasses ~360 m of the beachfront). Therefore, the feature does not meet either 1(a) or 1(b) of the "Representativeness" criteria.

Rarity and distinctiveness

According to (Hilton et al., 2000), Northland retains 25% of its active duneland extent relative to 1950s, and therefore does not meet rarity and distinctiveness criterion 1(a).

As noted above, the coastal dune vegetation within the proposed works footprint contains a small population of pīngao, and therefore meets criterion 2(b) with respect to rarity and distinctiveness.

Diversity and pattern

Indigenous vegetation within the proposed works footprint comprises a single community with a small number of indigenous species (most in very small populations), and a single, very

modified ecological sequence (mobile foredune to stabilised dune crest). Therefore, the feature does not meet “diversity and pattern” criteria.

Ecological context

Indigenous vegetation within the proposed works footprint does not provide any important buffering or linkage functions, as it is largely isolated by prior development of the surrounding area. Therefore, the feature does not meet the “ecological context” criterion.

5.0 Assessment of Ecological Effects

5.1 PNRP Approach

The proposed Northland Regional Plan (pNRP) (D.2.18) directs that a system-wide approach should be taken in relation to identified values of indigenous biodiversity when assessing and managing adverse ecological effects. While this policy specifies that adverse effects on indigenous biodiversity (including indigenous taxa that are listed as Threatened or At Risk in the New Zealand Threat Classification System lists, and the values and characteristics of areas of indigenous vegetation and habitats) are to be avoided, assessment of potential adverse effects is to take a system-wide approach to large areas of indigenous biodiversity, recognising that the scale of the effect of an activity is proportional to the size and sensitivity of the area of indigenous biodiversity.

5.2 Effects on At-Risk Flora

While pīngao is widespread throughout New Zealand it is classified as “At Risk” due to its naturally restricted distribution (it is confined to mobile duneland habitats) and population decline through parts of its range due to susceptibility to mammalian browsing, disturbance by foot traffic and vehicles, and competition from invasive weeds (particularly exotic grasses) that modify its habitat. Where these threats are managed, pīngao regenerates well and can be successfully rehabilitated.

Removal of vegetation within the works footprint will remove a small number of pīngao plants along the beachfront westward of Marsden Point, though several pīngao patches along the immediately adjacent portion of beach will be retained. The loss of a small number of plants within the footprint will not affect the overall viability of the pīngao population along the adjacent beachfront, or in the wider Waipu ED (the stronghold of which is in the Ruakākā Dunelands and southwards along the coastal margin).

5.3 Effects on Significant Ecological Features

A classification of Ecological Regions and Districts was developed for the Department of Conservation’s Protected Natural Areas Programme (McEwen, 1987) as a means of evaluating the ecological significance of natural areas in the context of the local and regional biogeographic characteristics that produce the characteristic landscape and range of biological communities in an area. The Waipu ED PNAP report (Lux et al., 2007) provides a helpful

framework for understanding the extent and characteristics of duneland habitats throughout the district, and the relative proportion and values of the vegetation community affected within a biogeographically relevant area.

In the context of the proposed development, the proposed development site is identified as ecologically significant according to pNRP criteria because of the occurrence of pīngao, but does not meet any other pNRP significance criteria. Therefore the pīngao population constitutes *“the values and characteristics of areas of indigenous vegetation and habitats of indigenous fauna that are assessed as significant”*, and the viability of this population is not adversely affected, as addressed above.

5.4 Effects on Predominantly Indigenous Vegetation

The indigenous duneland vegetation community within the works footprint and adjacent beachfront is somewhat isolated, and very reduced in extent and species richness, as a result of surrounding industrial development, and is an area of lower sensitivity relative to dune systems elsewhere in Waipu ED. The proposed development is likely to result in a minor shift in the composition of vegetation in the immediate surrounds (for example, residual patches of indigenous vegetation on the landward side of the development will alter as it will no longer be part of a mobile dune system).

The proposed development will result in the loss of a small area of predominantly indigenous duneland vegetation (approximately 50% of the vegetation on the foredune within the works footprint is predominantly indigenous, i.e., 3,600m²). At the “system-wide” scale of the wider Waipu ED duneland ecosystem, this represents a minor (though permanent) effect on the district-wide extent of indigenous duneland vegetation generally. At the scale of the immediate site and surrounds, the works will result in a 40% reduction in the extent of degraded indigenous foredune vegetation along the beachfront, which is a localised adverse effect of moderate magnitude in this local-scale context.

6.0 Effects Management

The proposed development will result in the removal of a ~10 m wide strip of a simplified but predominantly indigenous vegetation community along ~360 m of foredune on the Marsden Point beachfront.

Weeds, pests, and human disturbance are the primary threats to duneland communities both on the Marsden Point beachfront and within the wider Waipu ED. In the case of the subject site, encroachment of buffalo grass and other introduced plants into the duneland has reduced the extent of the indigenous dune ecosystem, and stabilised mobile dune systems, limiting the extent of occupancy by indigenous sand-binding species. We note that the subject site and surrounds is within public reserve land and stabilisation of the foredune in this location is intentional, in order to limit the amount of sand movement into adjacent industrial sites.

The Marsden Point beachfront is public land that is primarily managed for amenity and we note that opportunities for ecological enhancement are somewhat constrained due to previous stabilisation and development of the rear dunes, while exotic vegetation management that reverts stable dune sections to mobile duneland may result in increased movement of sand

which could cause a nuisance to adjacent operations. Restoration of this area may also be impeded by recreational use of the beach, as sand-binding grasses are sensitive to trampling. Accordingly, this area may not be appropriate for ecological restoration. Hence, we have identified two alternative options for mitigation of local-scale adverse effects on indigenous duneland vegetation. These include:

- a) Management of invasive exotic plants to maintain and expand the extent of indigenous dune ecosystem along the Marsden Point beachfront, and restoration planting to increase the cover of pīngao and other sand-binding plants in this area. Pīngao is readily cultivated and restored to duneland communities (the plants in question may have been previously planted, as prior revegetation activity was noted during the site survey), and regenerates well when browsing pests are controlled.
- b) A number of coast care groups are active in Waipu ED, the nearest of which is the Bream Bay Coastal Care Trust. We consider that a funding contribution to this group of an “in-kind” dollar amount equivalent to that required to undertake weed management and revegetation of the Marsden Point beach dune system is likely to achieve a greater ecological benefit than undertaking planting and pest management work on the Marsden Point beachfront. We recommend a nominal management area of 1.5 ha, i.e., roughly equivalent to the remaining area of dune system between the existing Northport site and the Marsden fuel terminal jetty.

7.0 Conclusion

The proposed development will have a localised adverse effect (by way of permanent reduction) on the coastal dune ecosystem along the Marsden Point beachfront, and is likely to result in a minor shift in the composition of adjacent vegetation inland of the site. However, the effect of the development will be minor relative to the overall extent and quality of indigenous duneland vegetation in Waipu ED.

Options for mitigation of local-scale adverse effects includes weed management and revegetation of the Marsden Point beach dune system, or an “in-kind” contribution to the Bream Bay Coastal Care Trust system. We note that the latter option is likely to achieve a greater ecological benefit.

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