

APPENDIX 4
WILDLANDS ECOLOGICAL ASSESSMENT

ECOLOGICAL ASSESSMENT OF
MAINTENANCE WORKS ON THE
WESTERN SPIT WALL,
WHAKATANE RIVER

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Prepared for:

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1. INTRODUCTION

Harrison Grierson Consultants Ltd is preparing an application on behalf of Whakatane District Council for resource consents - coastal consent and land use permit - for the retention and maintenance of the western spit wall at the Whakatane River Mouth and for the removal of sand to maintain the emergency floodway. A previous application in 2004 was notified and submissions were received, but the consent was not processed. The consent is for activities related to the ongoing maintenance of the training wall and emergency floodway located at the end of the Piripai Spit, including earthworks, grading of the access track, and use of the vehicles transporting material along the beach to the spit wall. Piripai Spit is a Wildlife Management Reserve administered by the Department of Conservation.

Submissions by Environment Bay of Plenty, Department of Conservation, and Forest and Bird in relation to the previous application raised concerns about the impact of activities on shore birds (specifically nesting northern New Zealand dotterel (*Charadrius obscurus*) and variable oystercatcher (*Haemotopus unicolor*)), vulnerable indigenous coastal vegetation, and the natural geomorphology of the dunes.

This report provides an assessment of the effects of maintenance activities, including access across the dunes and along the beach, on dune morphology and vegetation, shore birds and their habitat, and related mitigation measures.

2. PROPOSED MAINTENANCE WORKS

The existing spit training wall is located at the end of the Piripai Spit on the western side of the Whakatane River between the spit and Turuturu ('Statue Rock'). The wall was last reconstructed in January 1999 and consists of smaller-sized 'core rock' overlaid by larger 'armour rock'. The wall was originally constructed to be 80 m long, 6.0 m wide at the top with 1:1 batters and has a finished RL of 101.4 m, however is currently in a reduced state as a result of storm damage. The wall has been designed to suffer damage in one-in-five-year floods, such that in larger flood events it could be expected to be completely removed.

Should a flood event of sufficient magnitude occur to remove it or partially remove it, rebuilding or maintenance will be required. The spit west of the wall also needs to be maintained to an acceptable level. The opening of a channel to the west of Turuturu is essential to allow the efficient passage of flood flows. This part of the spit has been removed on several occasions in the past during significant flood events. It is proposed that the level of the spit will be managed to maintain a 50 m-wide depression/channel, extending from the estuary to the ocean across the spit.

The anticipated routine maintenance requirements include clearance of accumulated sand in the maintenance area at regular intervals and topping up of the wall with rock as required. Maintenance of the spit is proposed to be undertaken at three-monthly intervals, or when it reaches RL 102.00 m. The frequency of maintenance will be dependent on weather patterns but will involve the removal of up to 3,000 m³ of sand, which will be deposited on adjacent sand dunes or trucked to the existing stockpile on Council land to the west of the site.

Maintenance and construction plant will obtain access to the site from the end of Bunyan Road, then along a 3 metre-wide formed gravel road through the Council-administered land directly to the west of the urupa, on to the beach, and then eastwards along the beach below MHWS to the site (Access Route A). This route has been used on previous occasions for construction and maintenance of the wall, as well as being the route identified for access to undertake dredging of the spit. An alternative route (Route B) has also been proposed, from the end of Ohuirehe Road, across the formed access way to the beach, and then along the upper beach below MHWS. Both routes are shown on the map prepared by Harrison Grierson Consultants Ltd - refer to Appendix 1.

3. ECOLOGICAL CONTEXT

The spit and dunes comprising the site are in the Te Teko Ecological District and are part of an extensive complex of natural coastal dunes extending into the Otanewainuku Ecological District as far west as Otamarakau. This area - Otamarakau-Matata-Whakatane Dunes, Site No SVHZ-115 - is considered to be of national significance (Wildland Consultants 2006) due to its large size, diversity of vegetation types on a characteristically limited range of landforms, and significant geological feature. Descriptions of the vegetation and habitats are provided in this report.

The subject site is part of a much larger Recommended Area for Protection, extending from the Whakatane river mouth to Otamarakau, identified in a Protected Natural Areas Programme survey of Te Teko Ecological District (Wildland Consultants 2003).

The site has not been subject to detailed bird surveys, but the entire coastal strip from Whakatane to Otamarakau supports a diverse coastal fauna. Key sites along this coast are the river estuaries, lagoons, dune lakes, and coastal forest (c.f. Wildland Consultants 2001).

The beaches support small but significant numbers of shorebirds, including New Zealand dotterel, banded dotterel (*Charadrius bicinctus*), and variable oystercatcher. The greatest concentrations west of Golf Links Road are at Mimiha-Herepuru and Otamarakau (Wildland Consultants 2001). Other suitable breeding habitat is present at the river mouths and west of Golf Links Road, but all of these sites were heavily disturbed by people, vehicles, and domestic animals (Wildland Consultants 2001).

Northern NZ dotterel were recorded at the site in September-October 2008, but it is not known if the birds were breeding here (M. Jones, Department of Conservation, pers. comm.).

Coastal dunelands in New Zealand have become uncommon due to human modification and protection of them is a national priority under the New Zealand Coastal Policy Statement (NZCPS 1994), specifically Policies 1.1.3 and 1.1.4. Restoration and rehabilitation of coastal dunelands is recognised as a national priority under Policy 1.1.5. The Ministry for the Environment and the Department of

Conservation have released a “Statement of National Priorities for Protecting Rare and Threatened Biodiversity on Private Land” (MfE and DOC 2007a&b). This sets out four national priorities, of which two are potentially relevant to this site:

- National Priority 2: To protect indigenous vegetation associated with sand dunes and wetlands; ecosystem types that have become uncommon due to human activity.
- National Priority 4: To protect habitats of acutely and chronically threatened indigenous species.

4. METHODS

The following methods were utilised:

- Collation and evaluation of existing information was undertaken prior to field surveys.
- Field survey of vegetation and habitats was undertaken on 13 January 2009. This included initial recording of all bird species.
- A field survey of avifauna was undertaken in January 2009, including the sand spit, ocean beach, statue rock and upstream mudflat habitats. Additional notes were taken on 13 January. All counts were undertaken using a telescope, binoculars, and the naked eye, as was considered appropriate in relation to the distances of birds from the observer. Each habitat was assessed as to what species of avifauna, other than those present at the time of field survey, are likely to utilise the habitats present and a list of these was compiled.
- Key ecological constraints within the project area were identified.
- Potential effects on terrestrial, estuarine habitats and biota were evaluated based on information provided by Harrison Grierson Consultants Ltd.
- Options to avoid, minimise or mitigate for potential adverse ecological effects were considered and evaluated, including direct and indirect effects.

5. VEGETATION AND HABITATS

Access Route B from the end of Ohuirehe Road passes along a short fenced access way from the end of the formed road, through the dunes, and on to the beach.

Access Route A from the end of Bunyan Road is a gravelled 3 metre-wide road which passes through dunes and dune hollows which have a mosaic of vegetation types mostly dominated by adventive species, before cutting through the foredune to the beach. The following vegetation and habitat types (mapped in Figure 1) are present adjacent to the access road.

1. Adventive grasses and herbs

This vegetation type extends from approximately 20 metres inland of the foredune. Adventive grasses, such as cocksfoot (*Dactylis glomerata*), sweet vernal (*Anthoxanthum odoratum*), Chewings fescue (*Festuca rubra*), kikuyu (*Pennisetum clandestinum*), haretail (*Lagarus ovatus*) and herbs, such as sheep's sorrel (*Acetosa acetosella*), plantain (*Plantago lanceolata*), fleabane (*Conyza albida*), yarrow (*Achillea millefolium*) and catsear (*Hypochoeris radicata*) form a mosaic cover over most of the dunes. Occasional pampas (*Cortaderia selloana*), African boxthorn (*Lycium ferocissimum*), Chinese privet (*Ligustrum sinense*), lupin (*Lupinus arboreus*), and blackberry (*Rubus fruticosus* agg.) are scattered throughout. There is at least one large patch of Japanese honeysuckle (*Lonicera japonica*).

2. Pohuehue-bracken vineland

Dense entanglements of pohuehue (*Muehlenbeckia complexa*) and bracken (*Pteridium esculentum*) form extensive patches on the rear dunes. Occasional blackberry and scattered wiwi (*Ficinia nodosa*) are also present.

3. Spinifex- panahe-bare sand.

This vegetation type is present on the foredune, which grades further inland - approximately 20 metres - into adventive grasses and herbs. Spinifex (*Spinifex sericeus*) and panahe (*Calystegia soldanella*) are the predominant cover amongst otherwise bare sand. The cover is variable, but is up to 50%. Occasional catsear, haretail, and lupin are also present. *Carex pumila* occurs locally towards the eastern end of the spit.

4. Bare sand

An extensive strip of bare sand extends along the coast and into the river mouth.

5. Radiata pine-Casuarina sp. - Norfolk pine

A copse of planted trees, including radiata pine (*Pinus radiata*), *Casuarina* sp., and Norfolk pine (*Araucaria heterophylla*), with associated boxthorn and lupin.

6. Cropland

Cultivated land used for maize cropping and grazing.

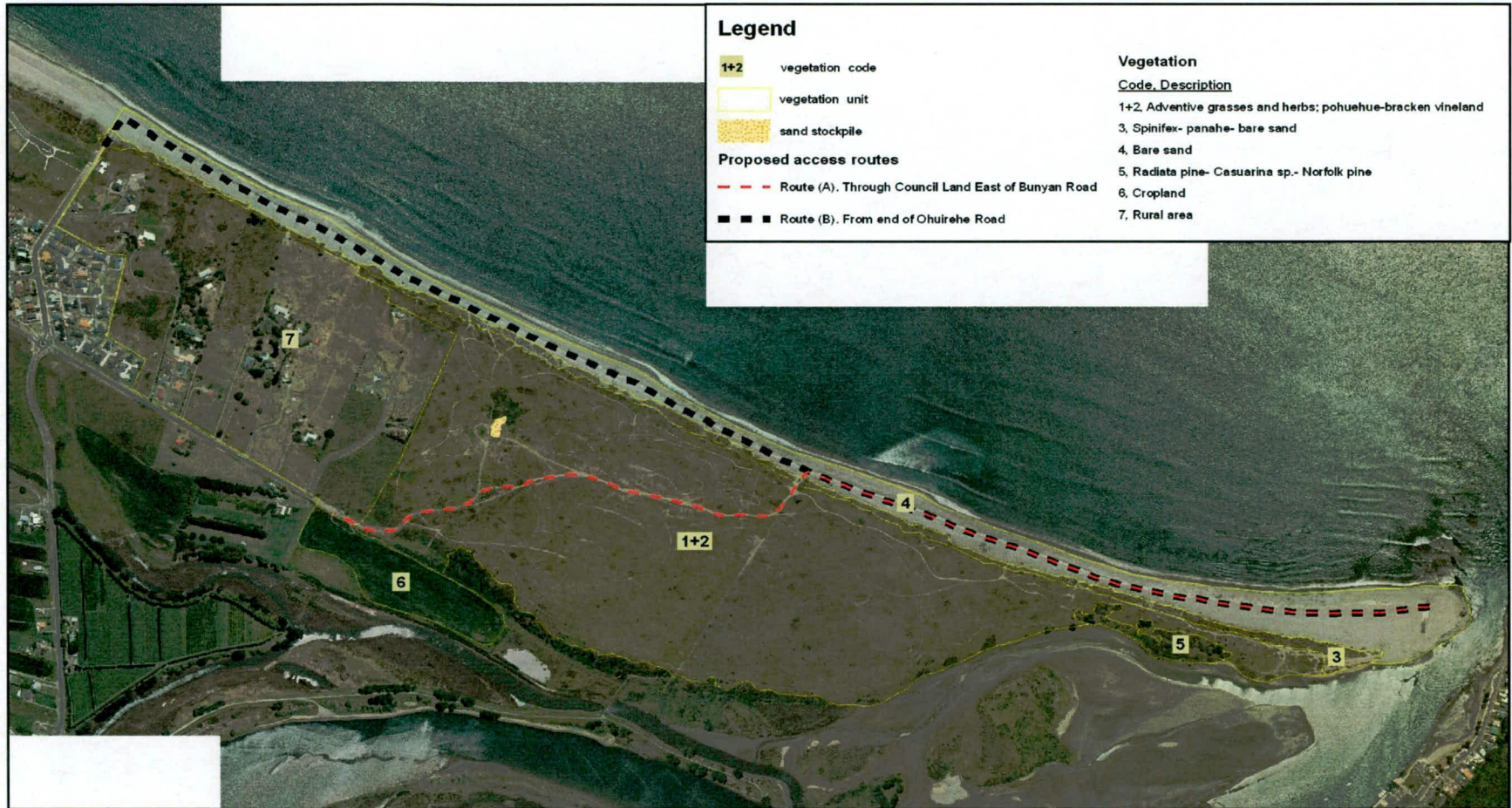
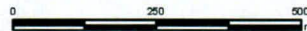


Figure 1: Vegetation of Western Spit Wall Access Area, Whakatane River



E:\gis\maggie\WesternSpitWall\WhakataneRiver\mxd\Whakatane Spit Vegetation Figure 1.mxd



Scale: 1:10,500
 Format: A4
 Date: 28/01/09
 Cartographer: FM

6. FLORA

Ten indigenous species were recorded and 21 adventive species. A detailed list of adventive species was not compiled. The only threatened indigenous species present (pingao, *Desmoschoenus spiralis*), classified as 'Chronically Threatened-Gradual Decline') has been planted at the site, on the coastward face of the foredune.

7. AVIFAUNA

The following records are for bird counts carried out on 15 January 2009, with additional observations from 13 January 2009.

Tide: Mostly out, although water was still flowing. The weather was sunny and calm, with a light sea breeze.

Sand Spit

Variable oystercatcher	3
Red-billed gull	55
Pied shag	1

Note: Minor disturbance by kayakers landing on beach. Suitable habitat for waders (e.g. New Zealand dotterel, variable oystercatcher, and banded dotterel), but disturbance is likely to be high adjacent to Whakatane township. As already noted, NZ dotterel have previously been recorded here but it is not known whether they breed here.

Ocean Beach

Red-billed gull	3
Welcome swallow	2
House sparrow	2

Note: Considerable disturbance caused by several motorbikes on the beach. On 13 January 60+ black-backed gulls and two spur-winged plovers were recorded in this habitat.

Mudflats in Estuary (Beyond Sand Spit), c.200 m Upstream of Training Wall

Pied shag	35
Black-backed gull	244
Red-billed gull	23
Variable oystercatcher	1

Note: This area is unlikely to be affected by this development. Royal spoonbills (*Platalea regia*) have been recorded here, and this is potentially excellent habitat for many wading birds, although none were recorded in this survey.

Statue Rock

Black-backed gull 2

Note: Potentially a good roost site for birds - may get more use at high tide.

Vegetated Dunes

The vegetated dunes are utilised by species such as skylark, welcome swallow, Australasian harrier, pheasant, Californian quail, yellowhammer, chaffinch, and house sparrow.

Other Species

Other birds likely to be present in the vicinity include temporary use of the mudflats by a wide range of migratory waders (e.g. bar-tailed godwits). Caspian terns and white-fronted terns are likely to feed in harbour and nearby open water. Black shag, little shag, and little black shag will utilise the river channel.

8. ECOLOGICAL CONSTRAINTS

Dune Landforms

The dune landforms are an important feature and need to be protected, while recognising that the spit and foredune are dynamic systems, subject to ongoing change.

The access road is already formed and there are unlikely to be further adverse effects on the dune landform. Care needs to be taken to ensure that blowouts do not form in the dunes.

Up to 3000m³ sand per year, excavated for maintenance of the floodway, may be deposited in the adjacent dunes or trucked to the stockpile on Council land to the west of the site. The frequency of maintenance and amount of material deposited will be dependent on weather patterns. However, this could have a significant impact on the natural morphology of the dune system at the end of the spit if not managed appropriately.

Vegetation

Vegetation on the dunes is dominated by exotic species. As noted, the access road is already formed and therefore there is unlikely to be further impacts on the vegetation. Access along the beach is below MHWS, where there is no vegetation. There is good quality indigenous vegetation above MHWS, on the front face of the foredune, and vehicle access to this must be avoided. This vegetation, which is mainly *Spinifex sericeus*, performs a very important dune protection and sand-entrapment role. Deposition of sand should also avoid any vegetation. Driftwood should also be left on the beach as this also performs an important sand-entrapment role.

Avifauna

Birds are likely to only be temporarily displaced by any works associated with the maintenance of the training wall. However there could be adverse impacts on any breeding birds on the sandspit (e.g. Northern NZ dotterels, variable oystercatchers) if works are carried out during the breeding season, and if they do actually breed here. The impact of proposed works on species utilising adjacent habitats (mudflats, harbour) is likely to be negligible.

Northern NZ dotterels (*Charadrius obscurus aquilinus*) are classified as 'Acutely Threatened-Nationally Vulnerable' with a national population of c.1,200 birds in 1996 (Hitchmough *et al.* 2007). A New Zealand endemic, this species is restricted to the northern half of the North Island. There is evidence of a decline in the last 100 years as well as evidence of a decline over part of its range since this time. This species is threatened by human use of habitat (e.g. housing development, pine plantations, plantings of marram grass, human disturbance, dogs, and stock) and introduced predators (Heather and Robertson 1996).

9. OPTIONS TO AVOID, MINIMISE OR MITIGATE FOR POTENTIAL ADVERSE EFFECTS

Although the indigenous vegetation of this site is heavily modified, the natural dune landform remains mostly intact. The accessway is defined and a gravel road has been formed as far as the foredune, where it cuts through the dune to the beach (Plate 2 - Appendix 3). Access must be restricted to this road through the dunes. Preferably the access across the frontal dune should be oblique to the coast, rather than perpendicular, to minimise the potential for wind erosion to cause a dune blow out. The track along the beach must be, as proposed, below the vegetated zone, to avoid any damage to native dune vegetation, including the tips of *Spinifex sericeus*.

Deposition of sand from floodway maintenance on the adjacent dunes to the west could have an adverse impact on natural dune morphology. Re-instatement of natural contours of deposited material should be carried out once the deposition has been completed. Deposition of sand should be a minimum of ten metres away from vegetation.

Potential disturbance of northern NZ dotterel and variable oystercatchers at nesting times can be avoided by restricting vehicle access to outside the breeding period from the start of October to the end of January. There should be no vehicle access above MHWS during these months. An assessment of the need for maintenance should be carried out prior to the breeding season, to enable any works to be done prior to the breeding season, if required.

Monitoring should be carried out to determine whether a breeding population of northern NZ dotterels is utilising the spit. If this proves to be the case, there is an opportunity to mitigate any potential negative effects by implementing a predator control programme through the breeding season.

ACKNOWLEDGMENTS

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PROPOSED ACCESS ROUTES
(HARRISON GRIERSON LTD)

VASCULAR PLANT SPECIES

* = planted,

INDIGENOUS SPECIES

Monocot. trees and shrubs

<i>Phormium tenax</i>	harakeke, flax
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Dicot. trees and shrubs

<i>Coprosma repens</i>	taupata
<i>Pseudopanax lessonii</i>	houpara

Dicot. Lianes

<i>Calystegia soldanella</i>	panahi
<i>Muehlenbeckia complexa</i>	pohuehue

Ferns

<i>Pteridium esculentum</i>	bracken, rarahu
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Grasses

<i>Desmoschoenus spiralis</i>	pingao
<i>Spinifex sericeus</i>	kowhangatara

Sedges

<i>Carex pumila</i>	
<i>Desmoschoenus spiralis</i> *	pingao
<i>Ficinia nodosa</i>	wiwi

ADVENTIVE SPECIES

Gymnosperms

<i>Pinus radiata</i>	radiata pine
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Dicot. trees and shrubs

<i>Ligustrum sinense</i>	Chinese privet
<i>Lycium ferocissimum</i>	African boxthorn
<i>Rubus</i> sp. (<i>R. fruticosus</i> agg.)	blackberry
<i>Ulex europaeus</i>	gorse

Dicot. Lianes

Lonicera japonica

Japanese honeysuckle

Grasses

Anthoxanthum odoratum sweet vernal

Cortaderia selloana pampas

Dactylis glomerata cocksfoot

Lagarus ovatus harestail

Paspalum dilatatum

paspalum

Pennisetum clandestinum

kikuyu grass

Festuca rubra

Chewings fescue

Composite herbs

Achillea millefolium

yarrow

Conyza albida

broad-leaved fleabane

Foeniculum vulgare

fennel

Hypochoeris radicata

catsear

Senecio jacobaea

ragwort

Dicot. herbs (other than composites)

Acetosa acetosella

sheep's sorrel

Lupinus arboreus

tree lupin

Plantago lanceolata

plantain

SITE PHOTOGRAPHS



Plate 1: Good quality indigenous vegetation dominated by spinifex (with panahi and pingao in centre of frame) on front face of foredune.



Plate 2: Access road (Route A) through dunes to beach.



Plate 3: Formed vehicle accessway (Route B) to beach at end of Ohuirehe Road.



Plate 4: Access route track along beach, at end of spit, adjacent to Statue Rock.



Plate 5: Adventive grasses and lupin near end of spit. Vegetation in foreground is dominated by boxthorn, with casuarina, radiata pine, and Norfolk pine in background.