

# 4 Ecology

## 4.1 Background

Coastal ecosystems at the entrance to Te Whanganui-a-Tara are exposed to environmental extremes. These ecosystems have been modified as vegetation has been cleared, and pests and weeds have become established.

### 4.1.1 Coastal environment

There are some historic descriptions of the vegetation on Motu Kairangi (Miramar Peninsula). Te Manihera, of Wairarapa, recalled the establishment of pā and settlement on the peninsula: “There was at that time [of pā building] a little rimu and totara, with a good deal of tawai, etc, on the eastern or Worsler Bay-side of the peninsula” (Crawford 1872, p400). Buchanan (1872) provided a list of plants that occupied the sea-side and sandhills. He said “introduced species ... have made little progress towards displacement of the indigenous species; this may be accounted for in some measure by the isolated situation, but mostly by the vigorous growth of the plants in possession; only where the scrub is burnt and nothing useful sown, as on the southern sea slopes, or on blown sand where there is only a sparse vegetation, can even the thistle find a holding ground”.

Despite this early observation, Oruaiti Reserve has some highly modified areas of vegetation. Photographs taken early last century show much of the vegetation on the headland was removed and the Point farmed. The open grassland was maintained for defence purposes. However there are still threatened species to be found across the headland and the area has a significant advantage as it is one of the few sites around the Wellington coast that is not immediately abutted by road or seawall.

The south-facing side (Breaker Bay) has dense regenerating coastal vegetation including wharariki or coastal flax (*Phormium cookianum*) and taupata (*Coprosma repens*). The rocky cliffs at the harbour entrance are sparsely vegetated, in some cases due to erosion but also evidence of the extreme coastal environment. The high winds and salt levels limit what plants will grow at this site. There is a small existing dune containing scattered spinifex or kowhangatara (*Spinifex sericeus*) and pingao (*Ficinia spiralis*) below the cliffs. There are few examples of indigenous dune habitat around the south coast, and most of these are affected by roads and seawalls.



**Coastal escarpment,  
Breaker Bay**

Oruaiti Reserve provides important coastal habitat for little blue penguins or korora (*Eudyptula minor*) and other seabirds, including white-faced herons (*Ardea novaehollandiae*), black-backed gulls (*Larus dominicanus* or karoro), red-billed gulls (*Larus novaehollandiae* or tarapunga) and the uncommon variable oystercatcher (*Haematopus unicolor* or toreapango).

## 4.2 Issues

### 4.2.1 Pests and weeds

Some of today’s weeds were present on Motu Kairangi (Miramar Peninsula) in 1872. They were scarce and Buchanan says many were “confined to the sea shore”. Some pasture grasses were “spreading over blown sand, and acting as a binder by its deep rooting” (Buchanan 1872, p 352).

There are a number of non-indigenous plant species present at Oruaiti Reserve. Some were planted or sown and others have arrived through wind and bird dispersal of seed. These plants can cause a problem because they are very successful, even in the harsh growing conditions of the site and they can, in time, predominate over the indigenous vegetation. This can lead to local extinctions of native species, both plants and animals, and damage the natural character of the site.

The vegetation on the north and west-facing slopes is dominated by weedy vegetation, including pine trees, gorse, cape ivy and lupin. Many of the conifers were planted when the area was a defence base.

Particular problems on this site are the South African ice plant (*Carpobrotus edulis*) and the karo (*Pittosporum crassifolium*), which does not naturally occur in Wellington. The South African ice plant is hybridising with the local ice plant (*Dysphyma australe*), which may lead to eventual local extinction of the native species.

The south-facing side is dominated by karo, which has naturalised here and now displaces the species that would have originally grown here. Some pohutukawa (*Metrosideros excelsa*), which is not found naturally in Wellington and is potentially weedy in the Wellington coastal environment, has been planted and is self-seeding.

Other serious weeds needing control are boneseed (*Chrysanthemoides monilifera*), marram (*Ammophila arenaria*), horned poppy (*Glaucium flavum*), cape ivy (*Senecio mikanooides*), and lupin (*Lupinus arboreus*).

The building of houses next to the reserve can create problems if gardens become the source of new weed species. Branches from pine trees have been found dumped over the escarpment onto the dune.

Whilst it is acknowledged that cats can be an issue for native wildlife, the majority of the cats in the reserve are likely to be pets from neighbouring residential areas. The Council will undertake an education programme around being 'good neighbours' to the reserve as part of the restoration programme. The issue of cats in the reserve and potential methods to reduce their impact (eg bell wearing, keeping them in at night) will be included in the information provided.

Rabbits are present in high numbers, browsing across the point, and will pose a threat to future plantings. Rats and mice are also present. With the abundance of rabbits and rodents it is very likely that mustelids are present. There are relatively high numbers of weasels at nearby Tarakena Bay and it is also likely that hedgehogs are present. Given the location close to residential housing, there are likely to be cats within the reserve which pose a threat to native wildlife.

All of these introduced mammalian predators threaten native wildlife, in particular, penguins and other seabirds nesting at the site and their eggs and chicks. Controls will need to be established to reduce the numbers of these predatory species.

#### 4.2.2 Dying flax

Flax on Oruaiti Reserve has been affected by yellow leaf disease. A native leafhopper spreads the disease, which is caused by a phytoplasma. The concern is that as the flax dies, coastal habitats will be overrun with weeds, and seabirds will lose habitat and cover. The Council has started some research into the extent of this problem and ongoing management options.

#### 4.2.3 Ecological restoration

Restoration of the site provides significant challenges.

There are scattered populations of important native species, many of them threatened. There are also fragmented areas of high-value habitat for native sea and shorebirds. Restoration needs to focus on removing weeds and planting to enable the existing populations to link up and become self-sustaining.

Many species originally found on this site are now rare and threatened, largely due to displacement by introduced weeds and habitat loss.

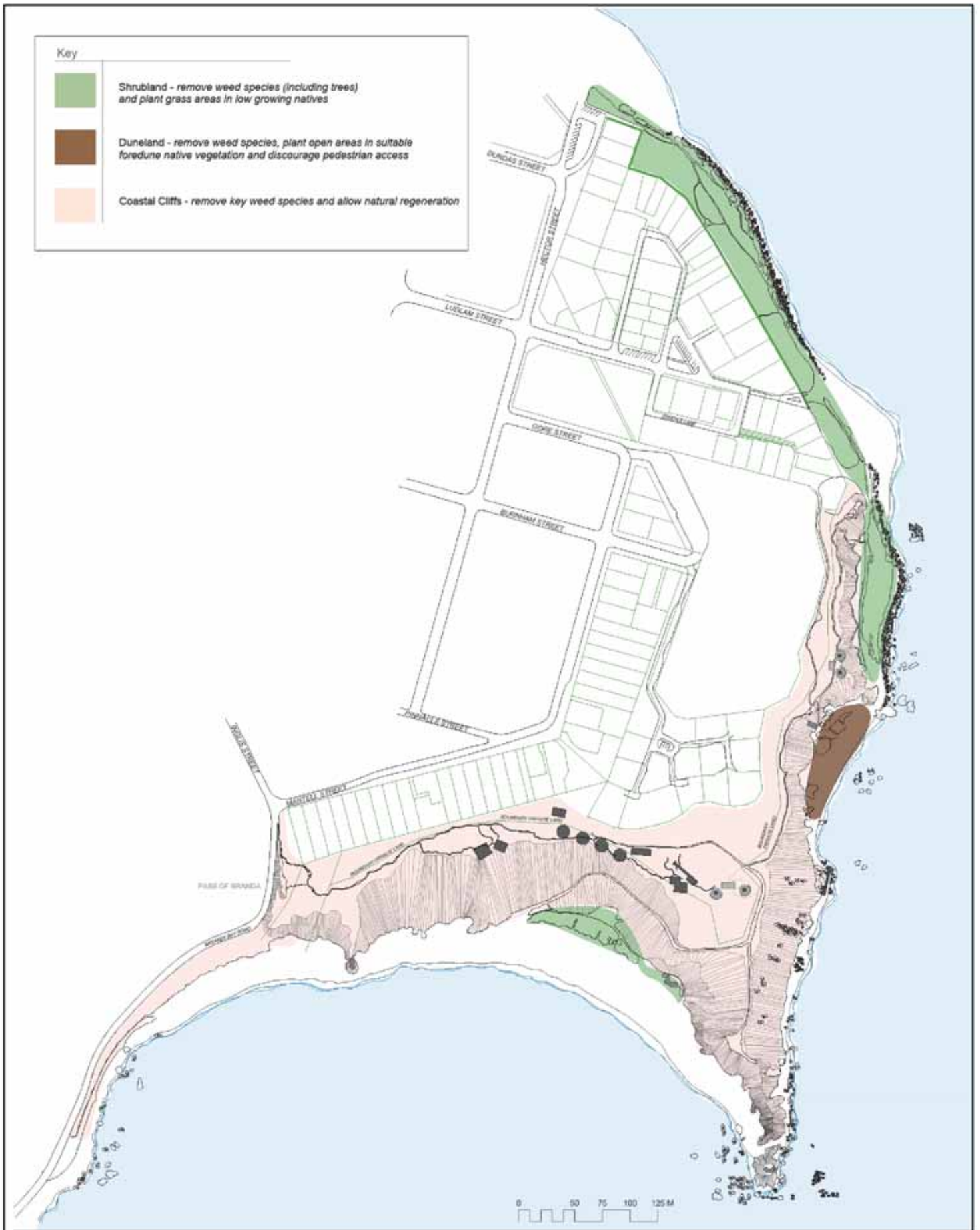


**Boneseed**



**Weeds growing over a track**





## Map E - Oruaiti Reserve Ecological Zones

Part of the original Point Dorset Reserve Landscape Opportunities Plans May 2011

Property boundaries, 20m Contours, road names, rail line, address & title points sourced from Land Information NZ. Crown Copyright reserved. Property boundaries accuracy: +/- 5m in urban areas, +/- 30m in rural areas. Census data sourced from Statistics NZ. Postcodes sourced from NZ Post Assets, contours, water and drainage information shown is approximate and must not be used for detailed engineering design. Other data has been compiled from a variety of sources and its accuracy may vary, but is generally +/- 5m.

MAP PRODUCED BY:  
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ORIGINAL MAP SIZE: A1  
AUTHOR: C Gordon  
DATE: 8/11/2011  
REFERENCE:  
SCALE: 1:1500@A1

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The aim for site restoration is to reduce the weed species, allowing more of the original coastal vegetation to establish. This would be done through natural regeneration and revegetation with eco-sourced coastal plant species that occur naturally around the Wellington coastline (see Map E and Appendix One). The work of Buchanan (1872) has been used to compile this list, although not all the species are still present on the south coast.

Revegetation would include those plant species now rare and threatened around the coast. This should lead to an increase in the numbers of native animals living in and around the site, including little blue penguins, other seabirds and shorebirds and native lizards.

Weed-control would also be undertaken at the reserve, in particular, removing the naturalised plants. This would be consistent with the management of other sites around the south coast. The ecological restoration will focus on three key ecosystems:

### **Duneland**

Most of the spinifex and pingao are centered around a dune system where the vegetation has become fragmented, largely due to people trampling on it. The remaining dune vegetation is struggling to survive under these conditions. Erosion of parts of the eastern escarpment has also affected some of the dune habitats. This is making it difficult for dune plants like pingao to establish or maintain a presence. Trying to establish plants on the erosion-prone ground along this escarpment will be difficult. The restoration of the dunes should focus on the large remaining dune by blocking access from the top of the escarpment and planting appropriate eco-sourced species.

The marram from this site needs to be removed before planting. To reduce the further loss of sand from the area, marram can be sprayed in strips and interplanted with pingao, which won't be affected by future spraying. Spinifex can be planted in areas to the north of the dune where marram does not have a strong presence. As well as spinifex and pingao, sand tussock (*Poa billardiae*), silver tussock (*Poa cita*), ice plant (*Dysphyma australe*) and sand coprosma (*Coprosma acerosa*) will be among the species used.



### **Shrubland**

Along the coast, there are patches of existing shrubland, but these are highly fragmented and separated by areas of exotic grasses. These patches have the potential to create substantial habitat for penguins, other shorebirds and native lizards. Planting the areas now covered by exotic grasses will also reduce the habitat available for rabbits and help to prevent reinvasion.

The majority of planting will involve taupata, interspersed with coastal flax, wire vine, mingimingi and thick-leaved mahoe. All of these are low-growing species. In the shrubland area, exotic tree species, including macrocarpa, would be removed as well as karo and pohutukawa.

There will be two areas where shrubland restoration will occur:

- 1) at the base of the Breaker Bay escarpment (below the track)
- 2) the flat from Hector Street in the north to the former Beach Battery.

### **Coastal cliffs**

In the areas of the escarpments and the ridgetops there would be limited or no ecological planting. Weed control would take priority here, particularly preventing the spread of weeds from the top of the headland down towards the more sensitive coastal area. Key species to target are the introduced ice plant, karo and boneseed. The isolated patches of gorse and cape ivy should also be targeted to prevent their spread.



#### **4.2.4 Human impacts**

Members of the public have raised concerns about environmental damage at Oruaiti Reserve. They include the following:

- Use of the reserve and the development of tracks have caused damage and loss of vegetation, for example, the pathway through the fragile dune systems. Some tracks need to be better defined to stop plants being trampled and to reduce erosion.
- Oruaiti Reserve is a popular place to exercise dogs. The reserve is not an off-lead dog exercise area under the Council's Dog Policy and there are concerns that little blue penguins and other seabirds would be at risk if dogs were off-lead (see 5.2.3).
- Rubbish is left behind by some users of the reserve.
- Overfishing or overharvesting from the rocks off the point is a concern for some; there are, however, no signs indicating the limits on catch or harvests.
- Over the past decade, the area near Oruaiti Reserve has been converted from Fort Dorset (a military base) to housing and a school. There has been confusion about where the reserve boundaries are and the impression that the new houses encroach into the reserve and dune environment because coastal vegetation is being removed to provide views and some residents are planting in the reserve.

### **4.3 Objectives**

- Protect coastal ecosystems so that:
  - biodiversity is protected and enhanced
  - pest plants and animals are controlled effectively
  - changes and influences affecting the health of ecosystems are monitored and acted upon appropriately.
- Restore and enhance coastal ecosystems so that:
  - restoration improves ecological connectivity and enhances existing ecosystems
  - communities are motivated, inspired and educated to get involved in conserving biodiversity.

### **4.4 Policies**

#### **4.4.1 Pests and weeds**

- Plant and animal pest management will be carried out in accordance with the relevant policies and priorities set out in the Council's Pest Management Plan (2005).
- A predator trap line will be installed at Breaker Bay to protect penguins and other seabirds nesting in the area.
- No new pohutukawa trees will be planted. Pohutukawa may be removed to enable restoration.
- Conifers that pose a risk to visitor safety will be removed from the reserve. Conifers may also be removed to enable restoration.
- Work will be done with neighbouring landowners to provide information on the ecological restoration in the reserve and to stop the spread of garden weeds into the reserve and stop the dumping of garden waste.
- A proactive rabbit control programme will be carried out to reduce the population and ensure no harmful effects from these pests on existing vegetation and restoration programmes.

#### **4.4.2 Dying flax**

- Monitor the die-back of flax and impact on surrounding plant and animal species.
- Explore management options.

#### **4.4.3 Ecological restoration**

- All restoration work shall be carried out with eco-sourced plants.
- Planted species will be restricted to those native to the area.
- The Council will support community restoration initiatives with advice and, where possible, plants and other materials.
- Where possible, plant species will be allowed to establish naturally, once weeds have been removed.
- Planting will be carried out to join patches of existing vegetation, replace some grassed areas and reintroduce/support Wellington's threatened coastal plant species.
- A range of plant growth forms (shrubs, grasses, herbs, etc) will be used.
- To maintain views, only low-growing coastal plants will be used near the lookout area.
- The grassed area in the lookout area will be retained (see 3.4.1).
- The Council shall ensure that Oruaiti Reserve is included in citywide monitoring programmes, and that monitoring is carried out in line with the Biodiversity Action Plan (2007).
- Support will be given to community monitoring programmes, such as Places for Penguins, to increase understanding of the biodiversity at Oruaiti Reserve.
- Community interest groups involved in planting at Oruaiti Reserve will be consulted on specific planting priorities and programmes.

#### **4.4.4 Human impacts**

- Formalise or mark sections of track (see 5.4.1).
- Close informal or short-cut tracks that go through areas with important ecology, such as the dune.
- Control dog access at Oruaiti Reserve in line with the Council's Dog Policy (see 5.4.1).
- Work with Places for Penguins on ways to improve habitat for penguins.
- Retain rubbish bins at the Breaker Bay and Hector Street entrances.
- Work with the Ministry of Fisheries on education and/or appropriate signs about shellfish limits.
- Clearly define the reserve boundary, especially the area between Hector Street and Ludlam Street.
- To minimise the fire risk, enforce the ban on open fires on Wellington City Council land, unless authorised by the Council.