Key Native Ecosystem Plan for Cape Palliser – Te Mātakitaki a Kupe

2017-2020

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Contents

1. The Key Native Ecosystem Programme

The Wellington region's native biodiversity has declined since people arrived and the ecosystems that support it face ongoing threats and pressures. Regional councils have responsibility for maintaining indigenous biodiversity, as well as protecting significant vegetation and habitats of threatened species, under the Resource Management Act 1991 (RMA).

Greater Wellington Regional Council's (Greater Wellington) Biodiversity Strategy[1] sets a framework that guides how Greater Wellington protects and manages biodiversity in the Wellington region to work towards the vision below.

Greater Wellington's vision for biodiversity

Healthy ecosystems thrive in the Wellington region and provide habitat for native biodiversity

The Strategy provides a common focus across the council's departments and guides activities relating to biodiversity. The vision is underpinned by four operating principles and three strategic goals. Of these, goal one drives the delivery of the Key Native Ecosystem (KNE) Programme.

Goal One

Areas of high biodiversity value are protected or restored

The KNE Programme is a non-regulatory voluntary programme that seeks to protect some of the best examples of original (pre-human) ecosystem types in the Wellington region by managing, reducing, or removing threats to their ecological values. Sites with the highest biodiversity values have been identified and prioritised for management. Sites are identified as of high biodiversity value for the purposes of the KNE Programme by applying the four ecological significance criteria described below.

Representativeness	Rarity or Distinctiveness	Diversity	Ecological context
The extent to which ecosystems and habitats represent those that were once typical in the region but are no longer common place	Whether ecosystems contain Threatened/At Risk species, or species at their geographic limit, or whether rare or uncommon ecosystems are present	The levels of natural ecosystem diversity present, ie, two or more original ecosystem types present	Whether the site provides important core habitat, has high species diversity, or includes an ecosystem identified as a national priority for protection

A site must be identified as ecologically significant using the above criteria and be considered sustainable for management in order to be considered for inclusion in the KNE Programme. Sustainable for the purposes of the KNE Programme is defined as: a site where the key ecological processes remain intact or continue to influence the site and resilience of the ecosystem is likely under some realistic level of management.

KNE sites can be located on private or publically owned land. However, land managed by the Department of Conservation (DOC) is generally excluded from this programme.

KNE sites are managed in accordance with three-year KNE plans such as this one, prepared by Greater Wellington's Biodiversity department in collaboration with the landowners, tangata whenua and other partners. These plans outline the ecological values, threats and management objectives for sites and describe operational activities such as ecological weed and pest animal control. KNE plans are reviewed regularly to ensure the activities undertaken to protect and restore the KNE site are informed by experience and improved knowledge about the site.

2. Cape Palliser - Te Mātakitaki a Kupe Key Native Ecosystem

The Cape Palliser - Te Mātakitaki a Kupe KNE site (135 ha) is located at the southernmost point of the North Island in the South Wairarapa district, east of the coastal settlement of Ngawi (See Appendix 1, Map 1).

The KNE site contains a diverse range of coastal ecosystems and landforms, including gravel beaches, coastal rock platforms, regenerating native forest on steep coastal hillslopes, gravel herbfield and coastal turf communities, divaricate shrubland and coastal wetland.

Land clearance and burning on the coastal platform and lower slopes for agriculture was likely begun by early Māori, and the upper slopes later by Europeans for grazing. Native vegetation is now regenerating across most of the KNE site following the retirement from regular grazing in the early 2000s and the establishment of a QEII National Trust (QEII) open space covenant in one area in 1991.

The area is of great cultural and historical importance to Māori. This is highlighted by the area's Māori name and its connection with Kupe (the legendary Polynesian explorer), which translates as 'the view that was Kupe's'. This is a contraction of its full name *Te Mātakitakinga a Kupe ki Kaikōura ki te wāhi i haere ai te tamāhine a Kupe:* 'the gazing of Kupe towards Kaikōura, the place where the daughter of Kupe had gone'[2]. The area contains numerous archaeological sites with what are likely the oldest known remains of Māori settlement in New Zealand dating back to the 12th century, along with several landmarks and features affiliated with Kupe.

3. Landowners, management partners and stakeholders

Greater Wellington works in collaboration with landowners, management partners and stakeholders where appropriate to achieve shared objectives for the site. Greater Wellington also recognises that effective working relationships are critical for achieving the management objectives for each KNE site. In preparing this plan, Greater Wellington has sought input from landowners, management partners, treaty partners and relevant stakeholders, and will continue to involve them as the plan is implemented.

3.1. Landowners

There are four landowners across the KNE site (See Appendix 1, Map 2). All are supportive of the activities and objectives detailed within this KNE plan.

Trevor and Carol Hawkins and their family own a large proportion of the land within the KNE site boundary and are keen to protect and conserve the regenerating native forest on their property. Some areas of rank grass and scrub near their house and baches will continue to be grazed periodically to reduce fire risk. They and the previous owner have planted native plants in several areas; they are doing some pest control around their baches; and are fencing and retiring other areas of native vegetation.

The Mātakitaki a Kupe Reserves trustees manage four land parcels (known as Mātakitaki A1, A2, 1C1 and 3). Most of the Mātakitaki 3 parcel near the main NZ fur seal colony area is grazed for short periods in winter and spring to reduce fire risk. While the seal colony area is open to the public the trustees are interested in managing access, fire risk and impacts on wildlife and the environment in this culturally-sensitive area. The three parcels at the eastern end are restricted to the public and one was covenanted with QEII in 1991.

A third area in the east of the KNE site near the lighthouse has multiple owners and has been vested in trust under the Mātakitaki 1B2 Ahu Whenua Trust, and administered by a small group of trustees. This block was covenanted in 1991 with QEII.

Maritime New Zealand owns and manages the Cape Palliser lighthouse and related infrastructure.

3.2. Management partners

Management partners are those that fund or have an active role in the implementation of the KNE plan or the management of the site.

Within Greater Wellington, the management partners are the Biodiversity and Biosecurity departments. The Biodiversity department is the overarching lead department for Greater Wellington on the coordination of biodiversity management activities and advice within the KNE site. The Biosecurity department coordinates and carries out pest control activities.

The QEII National Trust has an open space covenant over the Mātakitaki 1B2 and 1C1 blocks (seel Appendix 1, Map 3). The local representative has previously undertaken

some weed control, primarily targeting buddleia (*Buddleia divide*) on seasonal flood-prone stream beds.

3.3. Treaty partners

Features of significance to Ngati Hinewaka, Ngati Kahungunu o Wairarapa and Rangitāne o Wairarapa are contained within the KNE site. The Cape Palliser - Mātakitaki area has a long history of habitation and contains remains of numerous kūmara gardens, stone walls, middens and several pā sites. Urupā of Ngāti Hinewaka are in the area, while several landmarks and natural features such as springs and rock formations have significance in Māori oral histories of Kupe and the earliest Polynesian explorers. The remains of New Zealand's oldest known inhabited Māori dwelling lie 4 km inland from the KNE site and dates from the 12th century.

3.4. Stakeholders

The following organisations are considered stakeholders. The primary interest in the KNE site for each organisation is indicated below:

The Aorangi Restoration Trust (ART)[3] in partnership with DOC maintains a network of predator kill-traps and penguin nesting boxes in various locations surrounding Aorangi Forest Park, including the Mangatoetoe Stream near the KNE site. The Trust's vision is to improve the biodiversity of the Aorangi Forest Park and surrounding areas, while maintaining opportunities for recreation and hunting. It is a community-led project with support from a number of groups and agencies including Greater Wellington.

DOC administers (on behalf of the Crown) the marginal strip land between the private land and the high tide mark, within the KNE site and the Kupe's Sail Rock Recreation Reserve on the immediate western boundary of the KNE site. They have carried out activities such as threatened plant protection work (eg, exclusion fencing and translocations for *Muehlenbeckia astonii*) in the past. DOC is the lead agency for marine mammal protection and advice and has signage and public information boards in place about the seal colony. While they will not be involved in the majority of this plan's implementation, they are supportive of the plan and will continue to act in a support and advisory role as they have done here prior to this KNE plan.

Heritage New Zealand is a stakeholder due to the extensive archaeological history of the area.

4. Ecological values

This section describes the ecological components and attributes that contribute to making the KNE site important. These factors help determine the site's value at a regional scale and how managing it contributes to the maintenance of regional biodiversity.

4.1. Ecological designations

Table 1 below lists ecological designations at all or part of the Cape Palliser - Te Mātakitaki a Kupe KNE site.

Table 1: Designations at the Cape Palliser - Te Mātakitaki a Kupe KNE site

Designation level	Type of designation
Regional	Parts of the KNE site are designated under Greater Wellington's proposed Natural Resources Plan (PNRP) as a habitat with significant indigenous biodiversity values; High macroinvertebrate community health (Schedule F1): • Kirikiri Stream and all tributaries • Un-named stream draining to the sea at Easting 269 9931, Northing 595 2563
Regional – Other	Parts of the KNE site are designated under Greater Wellington's proposed Natural Resources Plan (PNRP) as: • Ngā Taonga nui a Kiwa (Schedule B): a waterbody of particular significance to mana whenua: Raukawa Moana (Cook Strait) • Sites of Significance for Mana Whenua (Schedule C): Mātakitaki coast; Ngā Rā o Kupe coast • Geological features coastal (Schedule J): Cape Palliser/Mātakitaki; Kupe's Sail / Ngā Rā o Kupe
Other	Part of the KNE site is protected by a QEII open space covenant: • 5-07-081 (1991)

4.2. Ecological significance

The Cape Palliser - Te Mātakitaki a Kupe KNE site is considered to be of regional importance because:

- It contains highly **representative** ecosystems that were once typical or commonplace in the region but are now less common
- It contains ecological features that are **rare** or **distinctive** in the region
- It contains a high level of ecosystem **diversity**, with several ecosystem types represented within the KNE site boundary
- It has a valuable **ecological context** at the landscape scale and provides core/seasonal habitat for threatened indigenous bird and plant species

Representativeness

The vegetation communities present, although modified are highly representative of formerly more-extensive habitats in the ecological district[4].

The Threatened Environment Classification system[5] (LENZ) indicates most of the lower reaches and coastline of the KNE site is Chronically Threatened, having 10-20% of its original indigenous vegetation remaining. The upper slopes of the KNE site are classified as Critically Underprotected, with less than 30% remaining of indigenous vegetation and less than 10% of that being protected. See Appendix 1, Map 4.

The Singers and Rogers classification of pre-human ecosystems in New Zealand[6] indicates the vegetation components originally present would have been tōtara, mātai, ribbonwood forest (WF2) on the lower hillslopes, tītoki, ngaio forest (WF1) on the upper hillslopes and coastal platforms, and small areas of *Coprosma, Muehlenbeckia* shrubland/herbfield (CL3). Only 2.2% and 3.1% of the original regional extent of WF2 and WF1 respectively is estimated to remain today. No unmodified remnants of either the WF2 or WF1 forest remains here; however, secondary native regeneration is occurring across the KNE site. Significant areas of modified CL3 are thought to remain in the region.

Rarity/distinctiveness

Several naturally uncommon ecosystem types[7, 8] are present within the KNE site. These are coastal wetland, shingle/gravel beaches, coastal turfs and marine mammal haul-out areas. See Appendix 1, Map 5 for a map of habitat types within the KNE site.

The KNE site is known to support 31 plants listed in New Zealand's national threat classification system[9] and 24 regionally threatened plant species[10]. Nine nationally threatened birds have been recorded.

Nationally threatened plant species are listed in Appendix 2 and regionally threatened plant species in Appendix 3.

Diversity

The KNE site contains numerous ecosystems types, ranging from gravel backdunes and beach, gravel herbfield communities, wetlands, rock stacks, divaricate shrubland and coastal cliffs, hillslopes and gullies.

Ecological context

The designations under the PNRP and diversity of interconnected ecosystems identified within the KNE site make it highly valuable for regional biodiversity at both the habitat and species level, in particular for threatened coastal and shore birds, plants, reptiles and invertebrates.

The KNE site is adjacent to three other managed or protected coastal sites of high biodiversity value: Te Kawakawa KNE site to the west, and Aorangi Forest Park, Kupe's Sail Rock and the Mangatoetoe Reserves all managed by DOC. The Mātakitaki 1B2 and 1C1 blocks are large land areas under legal protection via a QEII covenant.

4.3. Ecological features

The Cape Palliser - Te Mātakitaki a Kupe KNE site is in the Aorangi Ecological District[11]. Its primary climatic ecosystem drivers are warm temperatures and semi-arid moisture levels, with its well-drained rocky soil and prevailing northwest winds creating a predominantly warm and dry climate. The coastal cliff habitat is also influenced by wind erosion.

See Appendix 1, Map 5 for a map of habitat types.

Habitats

Coastal cliffs and upper hillslopes

While nothing remains of the original forest on the cliffs and hillslopes as a result of clearance and burning for grazing, secondary native vegetation is now re-establishing. Kānuka (*Kunzea ericoides*), māhoe (*Melicytus ramiflorus*), cabbage tree (*Cordyline australis*), kōwhai (*Sophora microphylla* and *S. molloyi*), tauhinu (*Ozothamnus leptophyllus*), ngaio (*Myoporum laetum*) and various *Coprosma* species such as *C. propinqua* are most common. Speargass (*Aciphylla squarrosa*) is scattered at low density.

The more remote and inaccessible cliffs and eroding fans throughout the KNE site contain a third vegetation type, *Coprosma, Muehlenbeckia* shrubland habitat (CL3). Today the KNE site contains a modified example of this, with rare species such as *Muehlenbeckia astonii*, Cook Strait tussock (*Chionochloa beddiei*), *Brachyglottis greyi* and Cook Strait kōwhai (*Sophora molloyi*), along with *Clematis forsteri, Convolvulus waitaha,* New Zealand jasmine (*Parsonsia capsularis*) and New Zealand broom (*Carmichaelia* sp.) present. Taupata (*Coprosma repens*), tauhinu, coastal flax or whaarariki (*Phormium cookianum*) and *Poa cita* are common.

Coastal bare rock platforms and gravel beaches

Whilst the shoreline near Kupe's Sail is notable for the steep, cliff-like coastal platforms that are exposed to southerly ocean swells, the sheltered margins in the centre and east inside the KNE site boundary have a shallower gradient that has developed gravel beach habitats. *Muehlenbeckia ephedroides* is present in several gravel beach locations, along with more common but scattered New Zealand ice plant (*Disphyma australe*), *Poa cita* and rush species.

Coastal wetland and turf; marine mammal haul-out areas

There is one small permanent wetland area on the coastal platform near the main NZ fur seal colony. It is largely comprised of three-square (*Schoenoplectus pungens*) and *Isolepis prolifera.*

Coastal turf communities are found in saline-influenced damp areas towards the rear of the bare rock coastal platform and contain remuremu (*Selliera radicans*), glasswort or ureure (*Sarcocornia quinqueflora*) and sea primrose (*Samolus repens*).

The presence of the permanent New Zealand fur seal colony promotes turf-like assemblages of low-growing native and exotic grasses and rushes in preferred resting areas just behind the gravel beach areas.

Vegetated coastal platform, rock stacks and divaricate shrubland mosaic

This habitat covers the stable back-beach area up to the base of the vegetated lower hillslopes. Notable species include the blanket fern *Asplenium subglandulosum* and Cook Strait bristle grass (*Rhytidosperma petrosum*) found near gravel beach and bare rock environments. New Zealand ice plant, spinifex (*Spinifex sericeus*), *Pimelea prostrata*, rush species, *Poa cita* and *Zoysia minima* are also present. Further back as the environment is more sheltered with more soil, the vegetation is a mosaic of taupata, whaririki, rushes and New Zealand ice plant, with low statured māhoe and ngaio in more sheltered locations.

Rock stack habitat contains thick-leaved māhoe (*Melicytus crassifolius*), *Brachyglottis greyi*, *Crassula mataikona*, coastal flax or whaririki, taupata and various fern species (eg, *Asplenium appendiculatum* subsp. *maritimum*, *A. flabelliflorum* and *Pyrrosia eleagnifolia*).

The divaricate shrubland habitat is found along the foot of the hillslopes on the seaward side of the road and scattered on the vegetated coastal platform. It is dominated by pōhuehue (*Muehlenbeckia complexa*), taupata, thick-leaved māhoe, *Crassula mataikona* and tauhinu and contains scattered populations of *Muehlenbeckia astonii.*

Species

Plants

Thirty-one nationally-threatened plants have been recorded here to date. Among these notable species includes *Brachyglottis greyi;* (At-Risk – Naturally Uncommon), shrubby toroaro (*Meuhlenbeckia astonii*; Threatened – Nationally Endangered), Cook Strait tussock (*Chionochloa beddiei*; At Risk – Naturally Uncommon), thick-leaved māhoe (*Melicytus crassifolius*; At-Risk – Declining) and leafless pōhuehue (*Meuhlenbeckia ephedroides;* At-Risk – Declining). Twenty-four regionally threatened plants have been recorded to date, including *Leptinella pusilla* and *Melicytus crassifolius.*

Mammals

The coastline in the KNE site is important core habitat for the New Zealand fur seal (*Arctocephalus forsteri*) and supports a significant breeding colony. Southern elephant seal (*Mirounga leonina*) are regular visitors in low numbers[12]. Several species of cetacean such as orca (*Orcinus orca*), southern right whale (*Eubalaena australis*) and humpback whale (*Megaptera novaeangliae*) are occasionally sighted near the shore[13].

Birds

The KNE site is known to provide seasonal or core habitat for nine threatened bird species[14,15]: New Zealand pipit (*Anthus novaeseelandiae*; At Risk - Declining), red-billed gull (*Larus novaehollandiae*; Nationally Vulnerable), banded dotterel (*Charadrius bicinctus*; Threatened - Nationally Vulnerable), Caspian tern (*Hydropogne caspia*; Threatened - Nationally Vulnerable), variable oystercatcher (*Haematopus unicolor*; At Risk - Recovering), black shag (*Phalacrocorax carbo*; Naturally Uncommon), NZ falcon (*Falco novaeseelandiae*; At Risk - Recovering) and little penguin (*Eudyptula minor*; At

Risk - Declining). An Eastern rockhopper penguin (*Eudyptula filholi;* Threatened - Nationally Critical) was recorded for the first time in 2017[16].

Other more common native birds such as silvereye (*Zosterops lateralis*), tūī (*Prosthemadera novaeseelandiae*), bellbird (*Anthornis melanura*), grey warbler (*Gerygone igata*), Australasian harrier (*Circus approximans*), white faced heron (*Egretta novaehollandiae*) and kingfisher (*Halcyon sancta*) have also been recorded[17].

Reptiles

Northern grass skink (*Oligosoma polychroma*; Not Threatened) and raukawa gecko (*Woodworthia maculata;* Not Threatened) have been recorded in the rockstack and divaricate shrubland habitat in the KNE site[18,19]. Spotted skink (*Oligosoma lineoocellatum*; At Risk – Relict) and barking or Wellington green gecko (At Risk – Declining) have been found near the KNE site[20].

Invertebrates

The Wellington *Notoreas* moth (an undescribed relative of *Notoreas perornata;* Threatened - Nationally Critical) has been recorded here[21], along with the uncommon Boulder Copper butterfly (*Lycaena boldenarum*)[22]. Katipō spider (*Lactrodectus katipo;* At Risk - Declining) has been found near the KNE site[23].

5. Threats to ecological values at the KNE site

Ecological values can be threatened by human activities, and by introduced animals and plants that change ecosystem dynamics. The key to protecting and restoring biodiversity as part of the KNE programme is to manage threats to the ecological values at each KNE site.

5.1. Key threats

The Cape Palliser - Te Mātakitaki a Kupe KNE site has been highly modified by historical activities such as vegetation clearance, fire, grazing and more recently by ecological pest plants and animals.

Ecological pest plants are the key threat at the KNE site as they displace native plant species performing important structural and ecological functions such as providing food sources, shelter, roosts and refuge from predators for native fauna. They also inhibit the natural regeneration of native plant species including rare or threatened species such as *Muehlenbeckia astonii.*

Four ecological pest plant species are widespread across the KNE site, with several others present in more localized patches. The four widespread species are pig's ear (*Cotyledon orbiculata*), which is entrenched on the inland coastal platforms and becoming a threat on the hillslopes; lupin (*Lupinus arboreus)*, which forms dense stands once established; boxthorn (*Lycium ferocissimum*), which forms dense shrubland in exposed areas and larger tree-like forms (over 2m high) in more sheltered areas, and horned poppy (*Glaucium flavium*), which is present mainly above the high tide mark in gravel beach habitat.

South African ice plant (*Carpobrotus edulis*), agapanthus (*Agapanthus praecox*), Cape ivy (*Senecio angulatus*), non-local native karo (*Pittosporum crassifolium*), broom (*Cystisus scoparius*) and gorse (*Ulex europaeus*) are more scattered and often associated with the gardens of various houses and baches on the lower slopes. While currently at low levels they have the potential to become widespread and are a high priority for control and containment.

Pest animals are present throughout the KNE site and are known to damage native vegetation and prey on native animals. Pest animals known to be present include possums (*Trichosurus vulpecula*), mustelids (*Mustela* spp.), ship and Norway rats (*Rattus rattus* and *R. norvegicus*), mice (*Mus musculus*), hedgehogs (*Erinaceus europaeus*), feral cats (*Felis catus*) and rabbits (*Oryctolagus cuniculus*).

While the key threats discussed in this section are recognised as the most significant, a number of other threats to the KNE site's values have also been identified. Table 2 presents a summary of all known threats to the Cape Palliser - Te Mātakitaki a Kupe KNE site (including those discussed above), detailing which operational areas they affect, how each threat impacts on ecological values, and whether they will be addressed by management activities.

Table 2: Summary of all threats to ecological values present at the Cape Palliser - Te Mātakitaki a Kupe KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
Ecological weeds		
EW-1	Ground-covering weeds out-compete native vegetation and prevent regeneration. Key species include pig's ear, horned poppy and cape ivy.	Entire KNE site
EW-2	Woody weed species displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key species include boxthorn and lupin.	Entire KNE site
Pest animals		
PA-1*	Possums browse palatable canopy vegetation until it can no longer recover[24,25]. This destroys the forest's structure, diversity and function. Possums may also prey on native birds[26] and invertebrates.	Entire KNE site
PA-2*	Rats browse native fruit, seeds and vegetation. They compete with native fauna for food and can reduce forest regeneration. They also prey on invertebrates, lizards and native birds[27,28].	Entire KNE site
PA-3*	Mustelids (stoats[29,30] (*Mustela erminea*), ferrets[31,32] (*M. furo*) and weasels[33,34] (*M. nivalis*)) prey on native birds, lizards and invertebrates, reducing their breeding success and potentially causing local extinctions.	Entire KNE site
PA-4*	Hedgehogs prey on native invertebrates[35], lizards[36] and the eggs[37] and chicks of ground-nesting birds[38].	Entire KNE site
PA-5*	Feral, stray and domestic cats prey on native birds[39], lizards[40] and invertebrates[41], reducing native fauna breeding success and potentially causing local extinctions[42].	Entire KNE site
PA-6*	House mice browse native fruit, seeds and vegetation, and prey on invertebrates. They compete with native fauna for food and can reduce forest regeneration. They also prey on invertebrates, lizards and small eggs and nestlings[43,44].	Entire KNE site
PA-7*	Rabbits and hares (*Lepus europaeus*) graze on palatable native vegetation and prevent natural regeneration in some environments[45]. Rabbits are particularly damaging in sand dune environments where they graze native binding plants and restoration plantings. In drier times hares especially, will penetrate into wetland and forest areas browsing and reducing regeneration of native seedlings.	Entire KNE site
PA-8*	Wasps (*Vespula* spp.) adversely impact native invertebrates and birds through predation and competition for food resources[46].	Entire KNE site
PA-9*	Feral pigs (*Sus scrofa*) root up the soil and eat roots, invertebrates, seeds and native plants preventing forest regeneration[47].	Entire KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
PA-10*	Goats (*Capra hircus*) browsing affects the composition and biomass of native vegetation in the understory tiers of forest habitats, preventing regeneration of the most palatable understory species and reducing species diversity[48]. They may also cause soil erosion through over-browsing, tracking and regularly inhabiting particular areas[49].	Entire KNE site
PA-11*	Red deer (*Cervus elaphus)* and fallow deer (*Dama dama*) browse the forest understory and can significantly change vegetation composition by preferential browsing and preventing regeneration[50,51,52].	Entire KNE site
Human activities		
HA-1*	Recreational vehicles such as 4WDs and motorbikes can cause damage to dune systems and disturbance of the native ecosystem.	Entire KNE site
HA-2*	Agricultural practices, particularly grazing livestock can result in pugging soils, grazing inhibiting regeneration, wildlife disturbance and increasing nutrient content of soils and watercourses[53].	Entire KNE site
HA-3*	Fires caused by deliberate acts and uncontrolled campfires can quickly spread and burn large areas of vegetation and threaten buildings and assets.	Entire KNE site
Other threats		
OT-1*	Accidental fires caused by natural phenomena such as lighting strikes can lead to large fires burning native vegetation.	Entire KNE site

*Threats marked with an asterisk are not addressed by actions in the operational plan.

The codes alongside each threat correspond to activities listed in the operational plan (Table 3), and are used to ensure that actions taken are targeted to specific threats.

6. Management objectives

Objectives help to ensure that management activities carried out are actually contributing to improvements in the ecological condition of the site.

The following objectives will guide the management activities at the Cape Palliser - Te Mātakitaki a Kupe KNE site:

1. **To improve the structure* and function† of native plant communities**

* The living and non-living physical features of an ecosystem. This includes the size, shape, complexity, condition and the diversity of species and habitats within the ecosystem.
† The biological processes that occur in an ecosystem. This includes seed dispersal, natural regeneration and the provision of food and habitat for animals.

7. Management activities

Management activities are targeted to work towards the objectives above (Section 6) by responding to the threats outlined in Section 5. The broad approach to management activities is described briefly below, and specific actions, with budget figures attached, are set out in the operational plan (Table 3).

It is important to note that not all threats identified in Section 5 can be adequately addressed. This can be for a number of reasons including financial, legal, or capacity restrictions.

7.1. Ecological weed control

The aim of ecological weed control undertaken at the KNE site is to limit the impact of exotic species, maintaining the native biodiversity values and facilitating more natural functioning of the native ecosystem. Widespread species will be controlled first and longer-term as work progresses and resources allow; weed control work may expand to include other species.

Lupin, pig's ear, boxthorn and cape ivy, have been targeted for control since 2014/15 around the lighthouse (Maritime NZ) and eastern Mātakitaki blocks (see Appendix 1, Map 2 for land ownership). Survey and control work will be completed annually by Greater Wellington and across the KNE site progressively building upon the previous year's control work.

By the final year of this plan the aim is to have surveyed the whole KNE site for the four widespread weed species and undertaken control of the major infestations identified. If work progresses ahead of schedule, other weed species such as karo, broom and South African ice plant will be surveyed and controlled in priority areas.

7.2. Revegetation

The aim of revegetation work is to increase the diversity of native plant species in the KNE site. This will be done by supplying selected species to landowners to be planted, particularly where pest plants have been controlled such as around houses and baches.

8. Operational plan

The operational plan shows the actions planned to achieve the stated objectives for the Cape Palliser - Te Mātakitaki a Kupe KNE site, and their timing and cost over the three-year period from 1 July 2017 to 30 June 2020. The budget for the 2018/19 and 2019/20 years are indicative only and subject to change.

Table 3: Three-year operational plan for the Cape Palliser - Te Mātakitaki a Kupe KNE site

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable and resourcing		
							2017/18	2018/19	2019/20
1	EW-1, 2	Ecological weed control	Entire KNE site	GWRC Biosecurity department	Progressive survey and control of lupin, pig's ear, boxthorn, and horned poppy	Reduction in distribution and abundance of target species	$8,500	$8,500	$8,500
1	EW-1, 2	Revegetation	Entire KNE site	GWRC Biodiversity department, Landowners	Landowners planting selected native plants in areas of pest plant control work and for species enrichment	Plants supplied by GWRC and planted by landowners, with GWRC guidance if needed	$500	$500	$500
Total							**$9,000**	**$9,000**	**$9,000**

9. Funding contributions

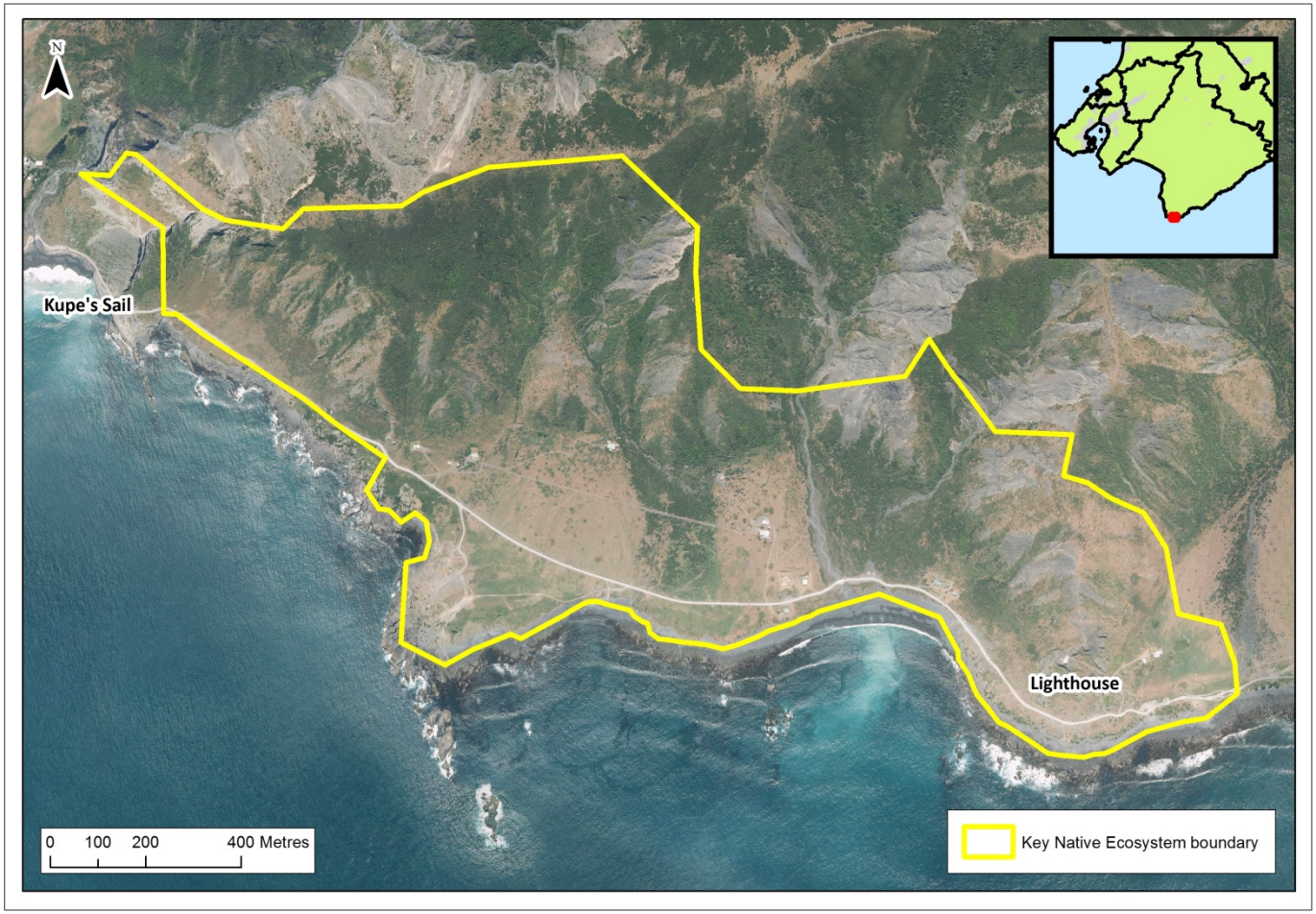
9.1. Budget allocated by Greater Wellington

The budget for the 2018/19 and 2019/20 years are indicative only and subject to change.

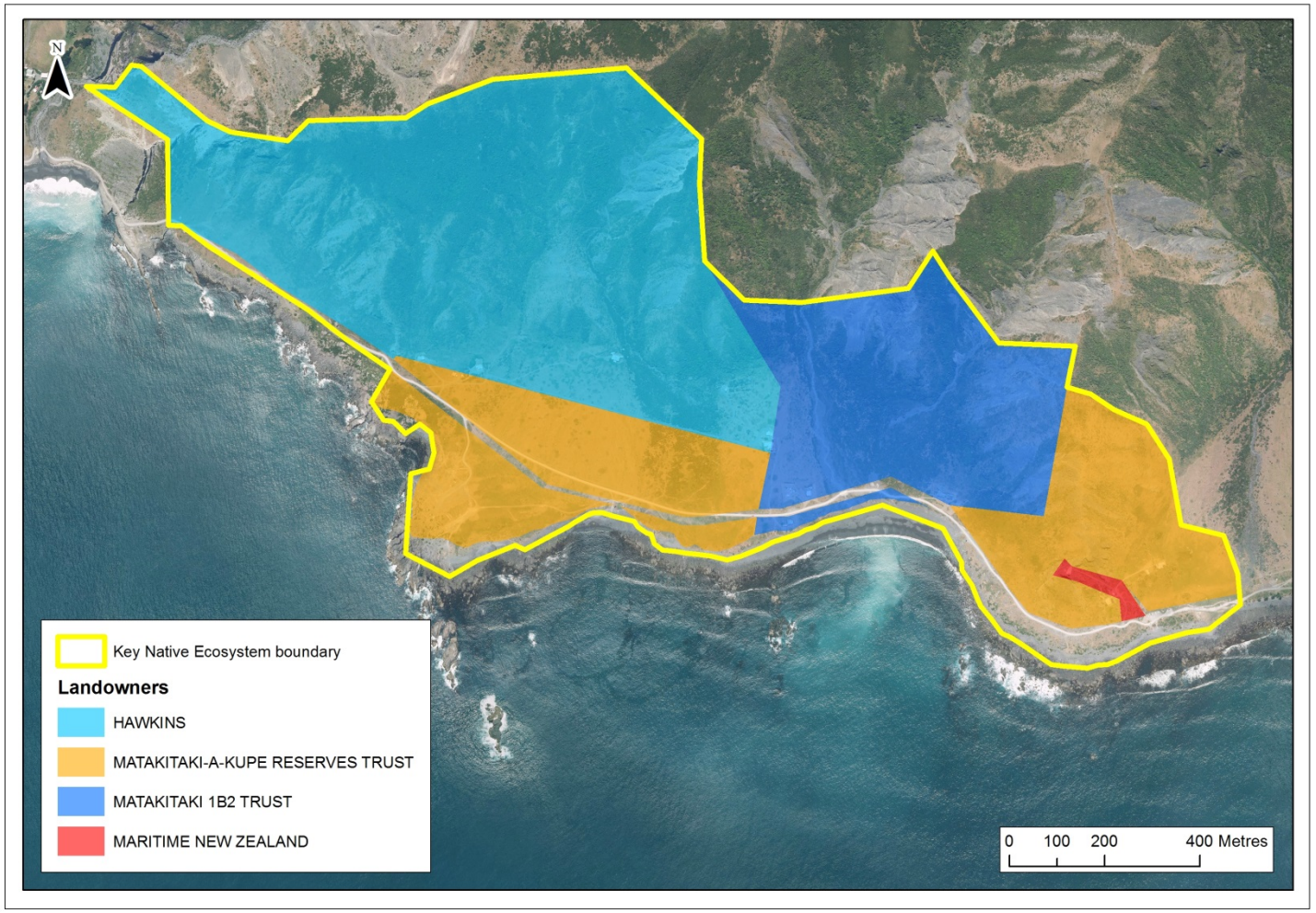
Table 4: Greater Wellington allocated budget for the Cape Palliser - Te Mātakitaki a Kupe KNE site

Management activity	Timetable and resourcing		
	2017/18	2018/19	2019/20
Ecological weed control	$8,500	$8,500	$8,500
Revegetation	$500	$500	$500
Total	**$9,000**	**$9,000**	**$9,000**

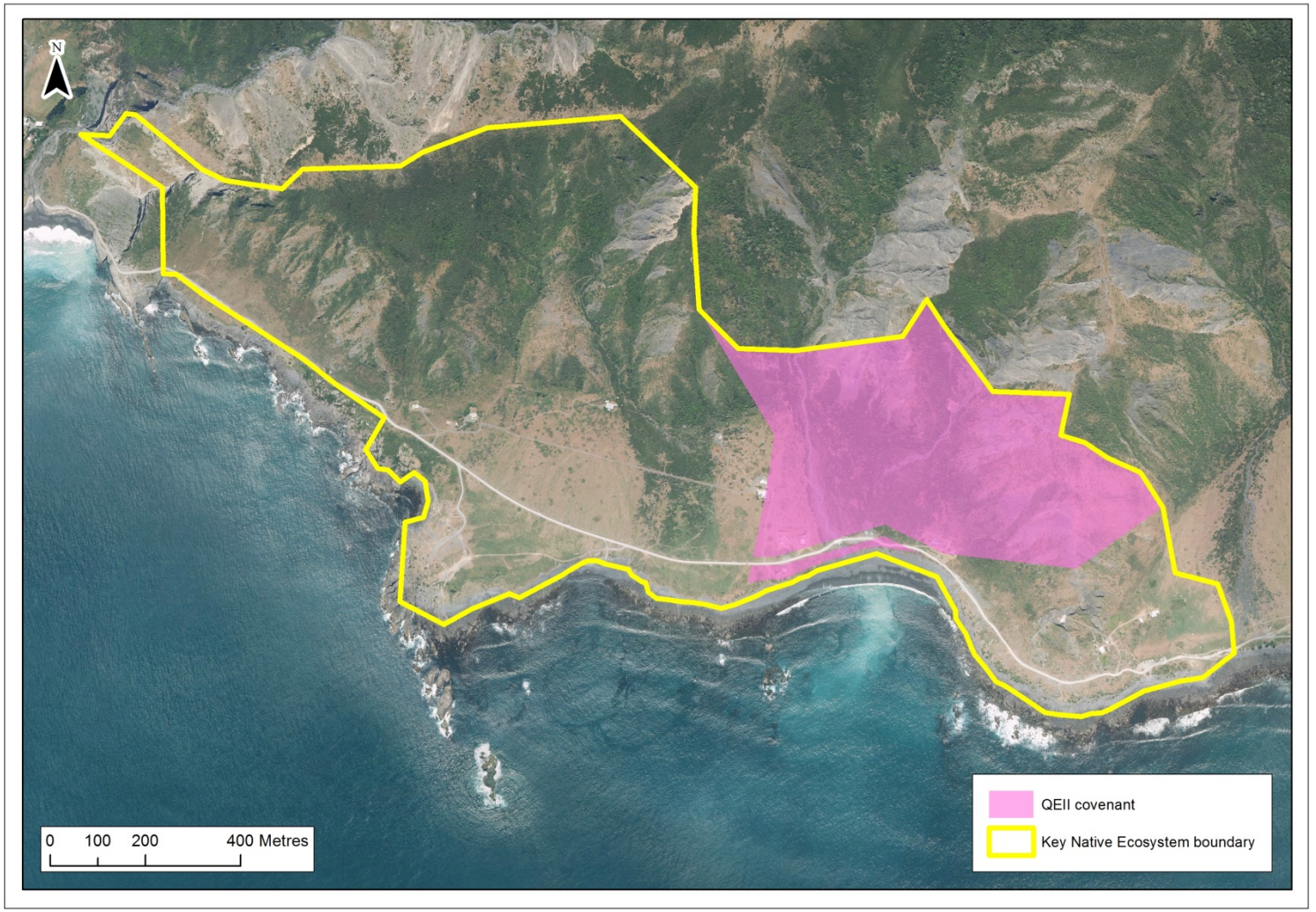
Appendix 1: Site maps



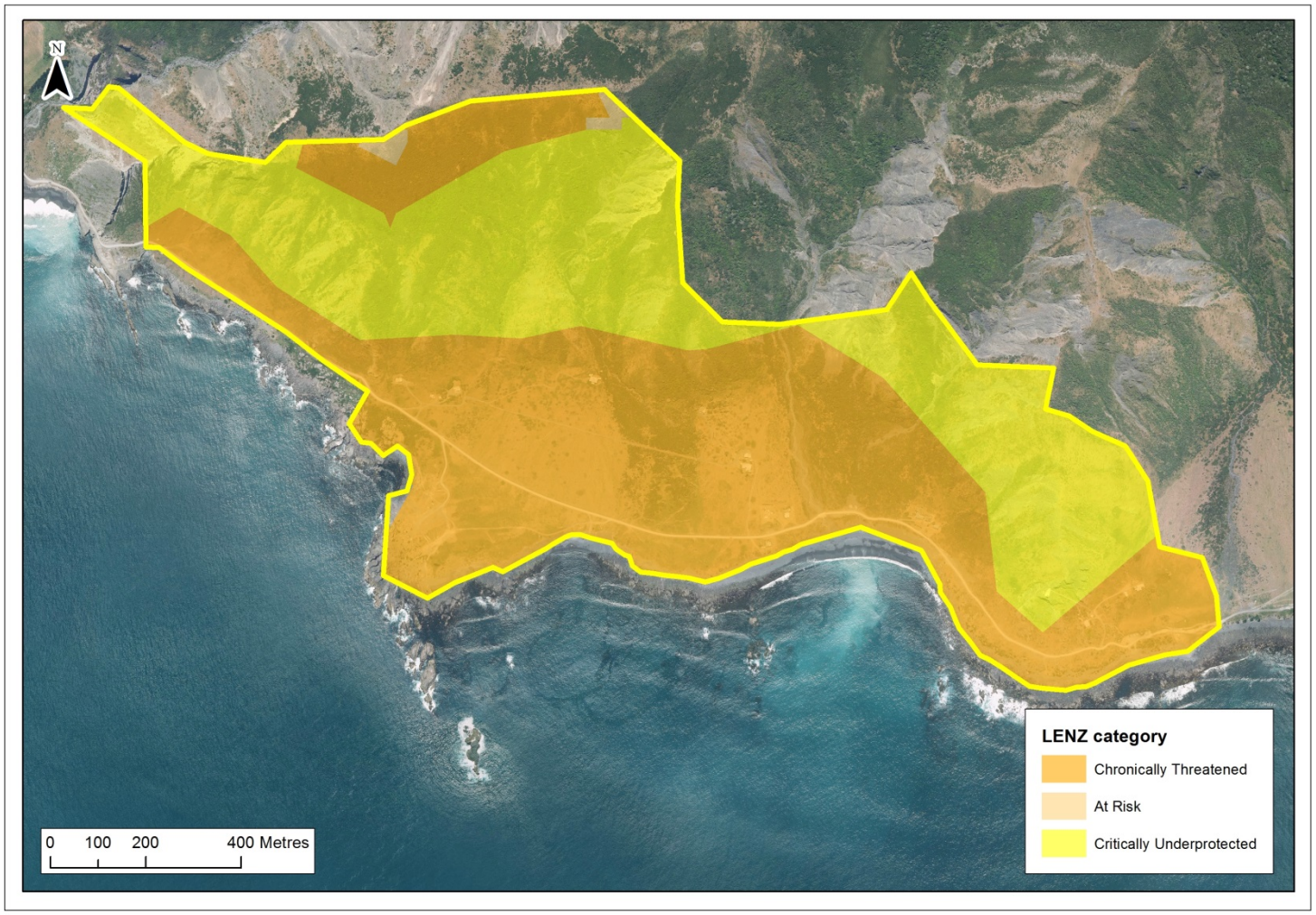
Map 1: The Cape Palliser - Te Mātakitaki a Kupe KNE site boundary



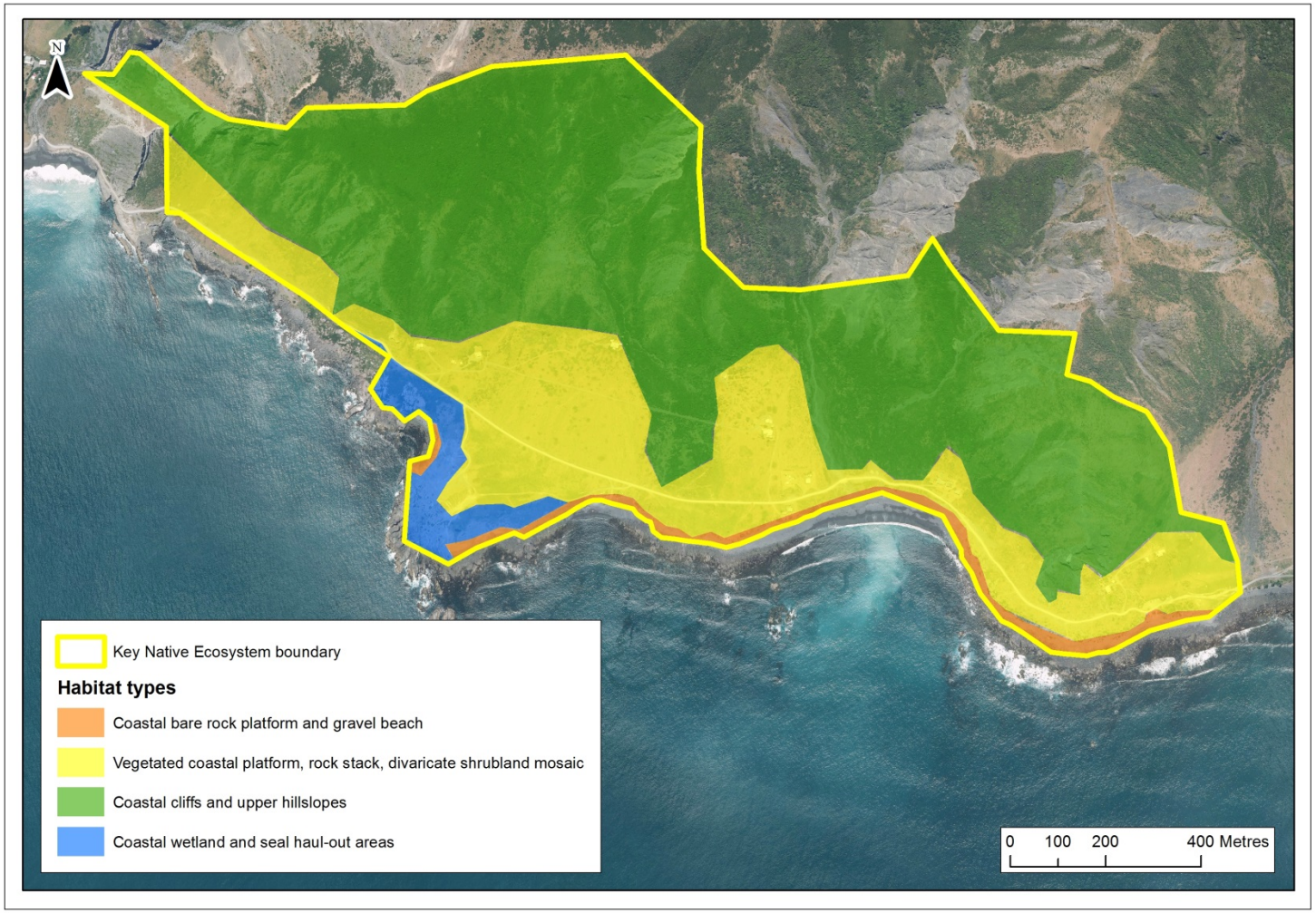
Map 2: Landowner boundaries in the Cape Palliser - Te Mātakitaki a Kupe KNE site, including road reserve



Map 3: QEII covenant areas in the Cape Palliser - Te Mātakitaki a Kupe KNE site



Map 4: LENZ threatened environments classification map for the Cape Palliser - Te Mātakitaki a Kupe KNE site



Map 5: Habitat types in the Cape Palliser - Te Mātakitaki a Kupe KNE site

Appendix 2: Nationally threatened species list

The New Zealand Threat Classification System lists species according to their threat of extinction. The status of each species group (plants, reptiles, etc) is assessed over a five-year cycle[54]. Species are regarded as Threatened if they are classified as Nationally Critical, Nationally Endangered or Nationally Vulnerable. They are regarded as At Risk if they are classified as Declining, Recovering, Relict or Naturally Uncommon. The following table lists Threatened and At Risk species that are resident in or regular visitors to the Cape Palliser - Te Mātakitaki a Kupe KNE site.

Table 5: Threatened and At Risk species at the Cape Palliser - Te Mātakitaki a Kupe KNE site

Scientific name	Common name	Threat status	Observation
Plants(vascular)[55]			
Anogramma leptophylla	Jersey fern, annual fern	Threatened – Nationally Vulnerable	Druce, 1947-87[56]
Asplenium subglandulosum	Blanket fern	At Risk – Naturally Uncommon	Druce, 1947-87
Brachyglottis greyi	Coastal groundsel	At Risk – Naturally Uncommon	Druce, 1947-87
Caladenia variegata		At Risk – Naturally Uncommon	Druce, 1947-87
Centipeda aotearoana	NZ sneezewort	At Risk – Naturally Uncommon	Druce, 1947-87
Chenopodium allanii		At Risk – Naturally Uncommon	Druce, 1947-87
Chionochloa beddiei	Cook strait tussock	At Risk – Naturally Uncommon	Druce, 1947-87
Coprosma acerosa	Sand coprosma	At Risk – Declining	Druce, 1947-87
Coprosma virescens		At Risk – Declining	Enright et al 2010-15[57]
Corybas rivularis	Spider orchid, silverback	Data Deficient	Tim Park, GWRC, pers obs 2013
Craspedia uniflora	Woollyhead	Data Deficient	Druce, 1947-87
Crassula mataikona		At Risk – Naturally Uncommon	Enright et al 2010-15
Crassula penduncularis		Threatened – Nationally Critical	Druce, 1947-87
Daucus glochidiatus	Native carrot	Threatened – Nationally Critical	Druce, 1947-87

Scientific name	Common name	Threat status	Observation
Eryngium vesiculosum	Sea holly	At Risk – Declining	Enright et al 2010-15
Ficinia spiralis	Pīngao	At Risk – Declining	Druce, 1947-87
Geranium microphyllum		At Risk – Naturally Uncommon	Enright et al 2010-15
Geranium solanderi	Solander's geranium	At Risk – Declining	Enright et al 2010-15
Melicytus crassifolius	Thick-leaved māhoe	At Risk – Declining	Druce, 1947-87
Muehlenbeckia astonii	Shrubby toroaro	Threatened - Nationally Endangered	Druce, 1947-87
Muehlenbeckia ephedroides	Leafless muehlenbeckia	At Risk – Declining	Druce, 1947-87
Myosurus minimus		Threatened – Nationally Endangered	Tim Park, GWRC, pers obs 2013
Nematoceras rivularis	Spider orchid-silverback	Data Deficient	Enright et al 2010-15
Poa billardierei	Sand tussock	At Risk – Declining	Druce, 1947-87
Petalochilus variegatus		At Risk – Naturally Uncommon	Enright et al 2010-15
Pimelea urvilleana	Pīnatoro	Data Deficient	Druce, 1947-87
Pterostylis foliata	Grassland greenhood	At Risk – Naturally Uncommon	Druce, 1947-87
Rytidosperma petrosum	Cook Strait bristle grass	At Risk – Naturally Uncommon	Druce, 1947-87
Sonchus kirkii	Shore puha, NZ sow thistle	At Risk – Declining	Tim Park, GWRC, pers obs 2013
Sophora molloyi	Cook Strait kōwhai	At Risk – Naturally Uncommon	Enright et al 2010-15
Trisetum antarcticum		At Risk – Declining	Tim Park, GWRC, pers obs 2013
Birds[58]			
Anthus novaezelandiae	NZ pipit / pīhoihoi	At Risk – Declining	Justin McCarthy, GWRC, pers obs 2014
Charadrius bicinctus	Banded dotterel / pohowera	Threatened - Nationally Vulnerable	Justin McCarthy, GWRC, pers obs 2016
Eudyptes filholi	Eastern rockhopper penguin	Threatened - Nationally Vulnerable	Anna Burrows, DOC, pers com 2017

Scientific name	Common name	Threat status	Observation
Eudyptula minor	Little blue penguin / Korora	At Risk - Declining	Tim Park, GWRC, pers obs 2013
Falco novaeseelandiae	NZ falcon / Kārearea	At Risk - Recovering	Enright et al 2010[59]
Haematopus unicolor	Variable oystercatcher / tōrea tai	At Risk - Recovering	Rebergen 2012[60]
Hydroprogne caspia	Caspian Tern / taranui; kāhawai	Threatened - Nationally Vulnerable	Justin McCarthy, GWRC, pers obs 2015
Larus novaehollandiae scopulinus	Red-billed Gull / tarāpunga	At Risk – Declining	Justin McCarthy, GWRC, pers obs 2016
Phalacrocorax carbo novaehollandiae	Black shag / kawau; kawau tuawhenua	At Risk - Naturally Uncommon	Rebergen 2012
Reptiles[61]			
Naultinus elegans punctatus	Wellington green gecko; barking gecko	At Risk – Declining	G. Eloff, QEII Trust, pers comm 2017
Invertebrates[62] (Lepidoptera – butterflies and moths)[63]			
Notoreas perornata (Wellington)	Coastal moth	Threatened - Nationally Critical	Patrick 2004[64]

Appendix 3: Regionally threatened plant species list

The following table lists regionally threatened species that have been recorded in the Cape Palliser - Te Mātakitaki a Kupe KNE site. Native plant species have been identified in the Plant Conservation Strategy, Wellington Conservancy 2004-2010[65].

Table 6: Regionally threatened plant species recorded in the Cape Palliser - Te Mātakitaki a Kupe KNE site

Scientific name	Common name	Threat status	Observation
Plants			
Anogramma leptophylla	Jersey fern, annual fern	Sparse	Druce, 1947-87
Asplenium subglandulosum	Blanket fern	Regionally Critical	Druce, 1947-87
Centipeda aotearoana	NZ sneezewort	Data Deficient	Enright et al 2010-15
Chionochloa beddiei	Cook strait tussock	Range Restricted	Druce, 1947-87
Coprosma acerosa	Sand coprosma	Gradual Decline	Druce, 1947-87
Crassula mataikona		Regionally Critical	Enright et al 2010-2015
Crassula penduncularis		Regionally Critical	Druce, 1947-87
Daucus glochidiatus	Native carrot	Regionally Critical	Druce, 1947-87
Coprosma virescens		Regionally Vulnerable	Enright et al 2010-15
Dichondra aff. brevifolia	Dichondra 'Big Flower'	Sparse	Druce, 1947-87
Epilobium cincereum	Willowherb	Data Deficient	Enright et al 2010
Ficinia spiralis	Pīngao	Gradual Decline	Druce, 1947-87
Geranium solanderi	Solander's geranium	Sparse	Enright et al 2010-15
Leptinella pusilla		Regionally Critical	Enright et al 2010-15
Melicytus crassifolius	Thick-leaved māhoe	Gradual Decline	Enright et al 2010-15
Muehlenbeckia astonii	Shrubby toroaro	Regionally Critical	Druce, 1947-87
Muehlenbeckia ephedroides	Leafless muehlenbeckia	Regionally Critical	Druce, 1947-87
Nematoceras rivularis	Spider orchid-silverback	Data Deficient	Enright et al 2010-15
Pterostylis foliata	Grassland greenhood	Sparse	Druce, 1947-87
Rytidosperma petrosum	Cook Strait bristle grass	Range Restricted	Druce, 1947-87
Scandia geniculata		Serious Decline	Enright et al 2010-15

Scientific name	Common name	Threat status	Observation
Sonchus kirkii	Shore puha, NZ sow thistle	Sparse	Tim Park, GWRC, pers obs 2013
Sophora molloyi	Cook Strait kōwhai	Regionally Vulnerable	Enright et al 2010-15
Trisetum antarcticum		Gradual Decline	Tim Park, GWRC, pers obs 2013

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Greater Wellington Regional Council:

Wellington office
PO Box 11646
Manners Street
Wellington 6142

T 04 384 5708
F 04 385 6960

Upper Hutt office
PO Box 40847
Upper Hutt 5018

T 04 526 4133
F 04 526 4171

Masterton office
PO Box 41
Masterton 5840

T 06 378 2484
F 06 378 2146

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info@gw.govt.nz
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