Key Native Ecosystem Plan for Mātaikonā Coast

2019-2024

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Contents

1. Purpose

The purpose of the five-year Key Native Ecosystem (KNE) operational plan for the Mātaikonā KNE site is to:

- Identify the parties involved
- Summarise the ecological values and identify the threats to those values
- Outline the objectives to improve ecological condition
- Describe operational activities (eg, ecological weed control) that will be undertaken, who will undertake the activities and the allocated budget

KNE operational plans are reviewed every five years to ensure the activities undertaken to protect and restore the KNE site are informed by experience and improved knowledge about the site.

This KNE operational plan is aligned to key policy documents that are outlined below (in Section 2).

2. Policy context

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)[1].

Plans and strategies that guide the delivery of the KNE Programme are:

Greater Wellington Long Term Plan

The Long Term Plan (2018-2028)[2] outlines the long term direction of the Greater Wellington Regional Council (Greater Wellington) and includes information on all our major projects, activities and programmes for the next 10 years and how they will be paid for. This document outlines that Greater Wellington will actively manage selected high value biodiversity sites. Most of this work is undertaken as part of the KNE Programme.

Proposed Natural Resources Plan

The Proposed Natural Resources Plan (PNRP) provides the high level strategic framework which sets out how Greater Wellington, Mana whenua partners and the community work together and includes:

- Guiding Principles that underpin the overall management approach of the plan (eg, kaitiakitanga)
- Sites with significant indigenous biodiversity values
- Sites of significance to mana whenua (refer Schedules B, C, Schedule D)

Greater Wellington Biodiversity Strategy

The Greater Wellington Biodiversity Strategy[3] (the strategy) is an internal document that sets a framework that guides how Greater Wellington protects and manages biodiversity in the Wellington region to work towards the vision.

Vision

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

The strategy provides a common focus across Greater Wellington's departments and guides activities relating to biodiversity. The vision is underpinned by four operating principles and three strategic goals. Goal one drives the delivery of the KNE Programme.

Goal One

Areas of high biodiversity value are protected or restored

3. The Key Native Ecosystem Programme

The KNE Programme is a voluntary programme of work. There is no statutory obligation for Greater Wellington to do this work. Greater Wellington invites selected landowners to discuss whether they would like to be involved in the programme. When work is done on private land, it is at the discretion of landowners, and their involvement in the programme is entirely voluntary. Involvement may just mean allowing work to be undertaken on that land.

The programme 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/ 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 publicly owned land. However, land managed by the Department of Conservation (DOC) is generally excluded from this programme.

KNE sites are managed in accordance with five-year KNE plans prepared by Greater Wellington's Biodiversity department. Greater Wellington works with the landowners, mana whenua and other operational delivery providers to achieve mutually beneficial goals.

4. Mātaikonā Key Native Ecosystem site

The Mātaikonā Coast KNE site (22 ha) is located in the eastern Wairarapa 10 km north of the coastal settlement of Castlepoint, and 53 km north-east of Masterton. The KNE site lies between the coastal settlements of Sandy Bay and Mātaikonā (see Appendix 1, Map 1).

The KNE site contains multiple ecosystem types but primarily consists of coastal rushland habitat on a rocky platform on the seaward side of Mātaikonā Road. Other ecosystems present include a large river mouth, riparian and estuary habitats, sand dunes, shingle beaches and coastal wetland sites.

This ecologically diverse site provides habitat for several Nationally Threatened bird, fish, plant and invertebrate species as well as other important flora and fauna in the district. This coupled with the natural regeneration occurring onsite and restoration planting make the KNE site a high priority area for biodiversity management.

5. Parties involved

There are many organisations, groups and individuals that play important roles in the care of the KNE site.

5.1. Landowners

Masterton District Council (MDC) administers the majority of the KNE site as it is public land designated as road reserve. Most of their operational work is focussed on road maintenance.

DOC administers the land on behalf of the Crown below the high-tide mark and coastal land below MDC's road reserve. They are supportive of the biodiversity management activities but will not be actively involved in implementation of this KNE operational plan.

5.2. Operational delivery

Within Greater Wellington, the Biodiversity, Biosecurity and Land Management departments are responsible for delivering the KNE operational plan. 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 Land Management department plans and advises on sustainable land use, soil conservation and water quality.

5.3. Mana whenua partners

Greater Wellington is committed to identifying ways in which kaitiakitanga can be strengthened by exploring opportunities on how mana whenua partners wish to be involved in the plan development or operational delivery of the KNE site.

The whole coastal area from the Whakataki River in the south to the Mātaikonā River in the north is significant to both Rangitāne o Wairarapa and Ngāti Kahungungu ki Wairarapa. Four sites within the KNE site boundary are listed as Sites of Significance to Mana Whenua in the PNRP (See Table 1). These sites are important for a number of reasons including pā, papa kāinga (semi-permanent settlements), urupā (burial ground), mahinga kai (food gathering areas) and ngakinga (cultivations) sites.

Both Wairarapa iwi (represented by Rangitāne o Wairarapa inc. and Ngāti Kahungungu inc.) are mana whenua partners in the KNE site (see Table 1). They are aware that their areas of interest are located on territorial authority land, and at present these interests lie mainly in reconnecting hapū and whānau in a broad sense with this area and its history and values. Where appropriate, Greater Wellington will explore opportunities to support this.

Table 1: Four sites of significance in Mātaikonā KNE site[4]

Sites of significance	Mana whenua values
Mātaikonā river mouth	Schedule C: pā, papa kāinga (semi-permanent settlements), urupā (burial ground), mahinga kai (food gathering areas) and ngakinga (cultivations) sites
Mātaikonā reefs and Aohanga coast	Schedule C: pā, papa kāinga (semi-permanent settlements), urupā (burial ground), mahinga kai (food gathering areas) and ngakinga (cultivations) sites
Te Rerenga o Te Aohuruhuru (Suicide Rock)	Schedule C: pā, papa kāinga (semi-permanent settlements), urupā (burial ground), mahinga kai (food gathering areas) and ngakinga (cultivations) sites
Whakataki coast	Schedule C: pā, papa kāinga (semi-permanent settlements), urupā (burial ground), mahinga kai (food gathering areas) and ngakinga (cultivations) sites

5.4. Stakeholders

The Mātaikonā Community Group was established in 2017 and is a group of residents and landowners with varied interests and act as a ratepayer association for dealings with MDC; currently these are mainly around roading and coastal erosion issues.

6. Ecological values

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

6.1. Ecological designations

Table 2 below lists ecological designations at all or part of the Mātaikonā Coast KNE site.

Table 2: Designations at the Mātaikonā Coast KNE site

Designation level	Type of designation
Regional	Parts of the Mātaikonā Coast KNE site are designated under Greater Wellington's Proposed Natural Resources Plan (PNRP) as: • A river with high macroinvertebrate community health (Schedule F1): The Ōkau Stream and all tributaries • Rivers and lakes with significant indigenous ecosystems - habitat for 6 or more migratory indigenous fish species (Schedule F1): Mātaikonā River • A river and parts of the coastal marine area containing inanga spawning habitat (Schedule F1b): Mātaikonā River • Habitats for indigenous birds in the coastal marine area (Schedule F2c): Mātaikonā rivermouth • A site with significant indigenous biodiversity values in the coastal marine area (Schedule F4): Mātaikonā rivermouth/estuary and Mātaikonā Reefs
District	Part of the Sandy Bay dune area is listed in DOC's 2004 Recommended Area for Protection Appendix 7 – Other areas of biological importance (Waipori Dune System)[5]

6.2. Ecological significance

The Mātaikonā Coast KNE site is considered to be of regional importance because:

- It contains highly **representative** ecosystems that were once typical or commonplace in the region
- It contains ecological features that are **rare** or **distinctive** in the region
- It contains high levels of ecosystem **diversity**, with several ecosystem types represented within the KNE site boundary, including several naturally uncommon ecosystems
- Its **ecological context** is valuable at the landscape scale as it contains a variety of inter-connected habitats, ecosystems identified as a national priority for protection and provides core/seasonal habitat for numerous threatened indigenous species within the KNE site

Representativeness

The Threatened Environment Classification system[6] indicates that a large part of the KNE site is classified as Acutely Threatened (having less than 10% of its indigenous cover remaining nationally). The remainder is classed as either Chronically Threatened (10-20% indigenous cover remaining nationally) or At Risk (20-30% indigenous cover remaining nationally)[7]. See Appendix 1, Map 2.

The KNE site is located in the Eastern Wairarapa Ecological District[8] and contains coastal habitats that are representative of coastal dune and rocky platform ecosystems. These ecosystems were formerly more extensive in this ecological district[9].

Wetlands are now considered an uncommon habitat type in the Wellington region with less than 3% remaining of their original extent[10].

Rarity/distinctiveness

Several naturally uncommon ecosystem types are present within the KNE site. These are active and stable sand dunes and dune slack wetlands (threat status Endangered), estuaries (Vulnerable), shingle beach (Endangered) and coastal turfs (Critically Endangered)[11].

Within the KNE site there are three plant species, nine bird species, five freshwater fish species and one invertebrate species listed in New Zealand's national threat classification system[12] as being Nationally Threatened or At-Risk. Two plant species present have also been listed as regionally threatened. Nationally Threatened/At Risk species are listed in Appendix 2 and regionally threatened species in Appendix 3.

Diversity

The KNE site contains several ecosystem types including coastal rushland, river mouth, riparian and estuary habitats, sand dunes, shingle beaches and coastal freshwater wetland sites.

Ecological context

The multiple 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 coastal and shore birds and fish.

The KNE site is also adjacent to the Owhanga Coast KNE site (to the immediate north). These KNE sites when combined provide a large coastal strip (approximately 12km) that is managed for biodiversity. These KNE sites also provide seasonal and/or core habitat for a number of Threatened species.

6.3. Ecological features

For ease of description and management, the site has been divided into seven operational areas listed below. See Appendix 1, Map 3 for a map of operational areas.

A - Mātaikonā River

B - Mātaikonā village dunes

C - Pimelea Point

D - Suicide Rock (Te Rerenga o Aohuruhuru)

E - Mātaikonā dune system

F - Ōkau Stream

G - Sandy Bay dunes

Habitats and vegetation

River mouth and estuary (operational areas A & F)

The Mātaikonā River (operational area A) has a tidal river mouth estuary constrained by a long gravel bank-sand spit and drains through a narrow outlet. The river mouth is often fully closed when easterly storms deposit large amounts of sand and gravel, forming a lagoon. During flood events the river cuts through the sand and gravel bank at various points. The river can have a tidal influence for up to two kilometers upstream[13]. The steep-sided nature and loose soil and gravel of the Mātaikonā River tidal margins mean there is minimal saltmarsh habitat, though three-square (*Schoenoplectus pungens*) is found along the base of the northern river bank and on the mudflats adjacent to the lagoon. Most of the riverbank is dominated by tall fescue (*Schedonorus arundinaceus*), however native vegetation is scattered throughout the area mainly consisting of toetoe (*Cortaderia toetoe*), cabbage tree (*Cordyline australis*) and wīwī (*Ficinia nodosa*).

The Ōkau stream estuary (operational area F) is mainly vegetated with tall fescue, with some scattered sea rush (*Juncus kraussii*) and sand sedge (*Carex pumila*). The riparian area of the Ōkau Stream is dominated by marram (*Ammophila arenaria*) and tall fescue but also contains wīwī, oioi (*Apodasmia similis)*, coastal tree daisy (*Olearia solandri)*, taupata (*Coprosma repens*), ngaio (*Myoporum laetum*), giant umbrella sedge (*Cyperus ustulatus*) and cabbage tree.

Rushland and dunes (operational areas A, B, C, E, F & G)

Pimelea Point (operational area C) is one of the most intact and unmodified areas remaining in the KNE site. This area is informally named for the abundant sand daphne (*Pimelea arenaria*) found here, a plant listed nationally as being in Serious Decline and regionally as Vulnerable. Sand coprosma (*Coprosma acerosa*), and wīwī is extensive throughout much of this rushland area with scattered sand wind grass (*Lachnagrostis billardierei*). Oioi dominates the lower-lying areas.

The Mātaikonā River system (operational area A) has a stable sand dune populated with wīwī, oioi, giant umbrella sedge and cabbage trees.

The Mātaikonā village dunes (operational area B) and the Mātaikonā dune system (operational area E) are rushland habitat populated with sand daphne, sand coprosma, wind grass and wīwī. Scattered cabbage trees, marsh ribbonwood (*Plagianthus divaricatus*) and giant umbrella sedge are found in lower-lying areas.

The sand dunes on the northern side of the Ōkau Stream mouth (operational area F), although dominated by marram, contain spinifex or kōwhangatara (*Spinifex sericeus*), sand sedge, wīwī, oioi, giant umbrella sedge and cabbage trees.

The Sandy Bay dunes (operational area G) contain sand daphne, sand coprosma and spinifex in the foredunes. The backdunes are vegetated with toetoe, coastal tree daisy and cabbage tree.

Beaches and coastal rock platform (operational areas D & F)

The coastal rock platforms known as the Mātaikonā reefs and shore platforms (entire KNE site) have an unusual geomorphology which has created a diversity of micro-habitats which provide environments for a particularly-rich marine algal flora[14].

Foreshore throughout the KNE site such as at Ōkau Stream (operational area F) and Suicide Rock (operational area D) contains shore plants such as shore buttercup (*Ranunculus acaulis*), glasswort (*Sarcocornia quinqueflora*), sea primrose (*Samolus repens*) and remuremu (*Selliera radicans*). These combine to form coastal turf communities.

Operational area D contains cliff habitat with typical hardy low-growing native plants present such as taupata and coastal flax (*Phormium cookianum*), and ngaio in more sheltered parts.

Coastal wetlands (operational areas A, B & G)

The Mātaikonā Village dunes (operational area B) contain a dune slack wetland with species such as giant umbrella sedge (*Cyperus ustulatus*), giant rush (*Juncus pallidus*), raupō (*Typha orientalis*), toetoe, swamp flax or harakeke (*Phormium tenax*), cabbage tree and oioi.

In the damper, low lying areas of the Sandy Bay dunes (operational area G) are more dune slack wetlands, with species such as harakeke, toetoe, raupō, three-square (*Schoenoplectus tabernaemontani;* regionally sparse) and rautahi (*Carex geminata*) present.

Species

Birds

The KNE site provides important seasonal or core habitat for a range of native coastal and shore bird species including threatened and common species.

The Mātaikonā River estuary is particularly important supporting nine Threatened or At-Risk bird species such as the black-billed gull (*Chroicocephalus bulleri*), pied shag (*Phalacrocorax varius*), banded dotterel (*Charadrius bicinctus bicinctus*), caspian tern (*Hydroprogne caspia*), black shag (*Phalacrocorax carbo*), red-billed gull (*Chroicocephalus scopulinus*), pied stilt (*Himantopus himantopus*), royal spoonbill (*Platalea regia*) and variable oystercatcher (*Haematopus unicolor*)[15] (see Appendix 2).

The Ōkau stream mouth is known to support variable oystercatcher, red-billed gull[16], banded dotterel, Caspian tern and pied stilt[17].

Other more common species present throughout the KNE site include the southern black-backed gull (*Larus dominicanus*), white-faced heron (*Egretta novaehollandiae*), paradise shelduck (*Tadorna variegata*), swamp harrier (*Circus approximans*) and New Zealand kingfisher (*Todiramphus sanctus*).

Fish

The Mātaikonā River provides seasonal or core habitat for seven migratory native freshwater fish species, five of which are listed as Nationally Threatened (At Risk – Declining): inanga (*Galaxias maculatus*), redfin bully (*Gobiomorphus huttoni*), kōaro (*Galaxias brevipinnis*), torrentfish (*Cheimarrichthys fosteri*) and longfin eel (*Anguilla dieffenbachii)*. Common bully (*Gobiomorphus cotidianus*) and shortfin eels (*Anguilla australis*) have also been recorded[18].

Invertebrates

Katipō spiders (*Lactrodectus katipo*) were recorded in 2011 near Pimelea Point (operational area C)[19] and in 2018 at Ōkau [20].

7. Threats to ecological values at the KNE site

7.1. Key threats

Ecological values can be threatened by human activities, and by introduced animals and plants that change the 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.

7.2. Key threats

Ecological weeds are considered the primary threat to the values of the KNE site. They can displace native plant species performing important structural and ecological functions in these coastal habitats, such as forming sand dunes. Ecological weeds are widespread throughout the KNE site. These weeds range from wilding pine trees to ground-covering plants and are affecting the regeneration of native coastal plant communities, and inhibiting the establishment of revegetation planting sites.

Crack willow (*Salix fragilis*), gorse (*Ulex europaeus*), lupin (*Lupinus arboreus*), wilding radiata pine (*Pinus radiata*) and brush wattle (*Paraserianthes lophantha*) are threats to the river mouth and estuary habitats.

Marram, gorse, tall fescue, wilding pine, agapanthus (*Agapanthus praecox*), gazania (*Gazania* sp.), pampas (*Cortaderia selloana*), kikuyu (*Cenchrus clandestinus*), blackberry (*Rubus fruticosus*), cape ivy (*Senecio angulatus*) and brush wattle are threats to the dune, rushland and wetland habitats. Parts of the Sandy Bay backdunes at Sandy Bay (operational area G) have been planted with non-indigenous species such as lavender (*Lavandula* sp.), geranium (*Pelargonium* sp.), arum lily (*Zantedeschia aethiopica*), alyssum (*Lobularia maritima*), karo (*Pittosporum crassifolium*), pampas, agapanthus, pig's ear (*Cotyledon orbiculata*) and an akeake (*Dodonaea viscosa*) cultivar.

Tall fescue, gorse and marram are threats to the beaches and rock platforms. Suicide Rock (operational area D) also contains areas of planted Tasmanian ngaio or boobialla (*Myoporum insulare*).

There are several informal walking tracks throughout the dune areas which are used by local residents, fisherman and boat users. It is important to keep the number of informal tracks to a minimum to prevent trampling of native plant species, which can lead to localised sand erosion and create open areas for weed species to colonise and spread.

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 3 presents a summary of all known threats to the Mātaikonā Coast 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 the management activities.

Table 3: Summary table of all threats to ecological values present at the Mātaikonā Coast KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area
Ecological weeds		
EW-1	Marram grass (*Ammophila arenaria*) outcompetes and excludes native dune species such as spinifex and pīngao. This alters dune form and function and the ability for dunes to recover after storm events.	A, B, C, E, G
EW-2	Woody ecological weeds (exotic and non-local native) displace native species and inhibit natural regeneration which alters ecosystem structure and function. Key weed species include crack willow (*Salix fragilis*), cape ivy (*Senecio angulatus*), lupin (*Lupinus arboreus*) and gorse (*Ulex europaeus*).	A, D, F
EW-3	Ground-covering weeds such as pampas (*Cortaderia selloana*), kikuyu (*Cenchrus clandestinus*), blackberry (*Rubus fruticosus*) and cape ivy (*Senecio angulatus*) outcompete and prevent natural regeneration of native plant species, altering ecosystem structure and function.	Entire KNE site
Pest animals		
PA-1*	Mustelids (stoats[21,22] (*Mustela erminea*), ferrets[23,24] (*M. furo*) and weasels[25,26] (*M. nivalis*)) prey on native birds, lizards and invertebrates, reducing their breeding success and potentially causing local extinctions.	Entire KNE site
PA-2*	Feral and domestic cats (*Felis catus*) prey on native birds[27], lizards[28] and invertebrates[29], reducing native fauna breeding success and potentially causing local extinctions[30].	Entire KNE site
PA-3*	Hedgehogs (*Erinaceus europaeus*) prey on native invertebrates[31], lizards[32] and the eggs[33] and chicks of ground-nesting birds[34].	Entire KNE site
PA-4*	Rats (*Rattus* spp.) 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[35,36].	Entire KNE site
PA-5*	House mice (*Mus musculus*) 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[37,38].	Entire KNE site
PA-6*	Possums (*Trichosurus Vulpecula*) browse palatable canopy vegetation until it can no longer recover[39,40]. This destroys the forest's structure, diversity and function. Possums may also prey on native birds[41] and invertebrates.	Entire KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area
PA-7*	Rabbits (*Oryctolagus cuniculus*) and hares (*Lepus europaeus*) are known to graze on palatable native vegetation and prevent natural regeneration in some environments[42]. Rabbits are particularly damaging in sand dune environments where they graze native binding plants and restoration plantings.	Entire KNE site
Human activities		
HA-1*	People and vehicles accessing the site (mainly for recreation purposes) can damage native vegetation, disturb native fauna and introduce the seeds of ecological weeds.	Entire KNE site
HA-2*	Agricultural practices, particularly grazing livestock can result in pugging soils, grazing native vegetation inhibiting regeneration, wildlife disturbance and increasing nutrient content of soils and watercourses[43].	A
HA-3*	MDC as majority landowner is primarily focused on road construction and maintenance activities. These activities can threatened the biodiversity values throughout the site via habitat loss, sedimentation, and ecological weed spread via machinery and ground disturbance. Plantings for bank stability may also spread weeds or contain inappropriate species.	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. A map of operational areas can be found in Appendix 1 (Map 3).

8. Vision

The KNE site contains a variety of diverse, self-sustaining and connected coastal habitats and managed with greater community engagement.

9. Objectives

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

The following objectives will guide the operational activities at the Mātaikonā KNE site.

1. **Enhance the biodiversity values of vegetation communities at Okau Stream, Sandy Bay dunes and Pimelea Point**
2. **Improve connectivity between Okau Stream, Sandy Bay dunes and Pimelea Point**
3. **The community is engaged in biodiversity management activities**

10. Operational activities

Operational activities are targeted to work towards the objectives above (Section 9) by responding to the threats outlined in Section 7. The broad approach to operational activities is described briefly below, and specific actions, with budget figures attached, are set out in the operational delivery schedule (Table 5).

It is important to note that not all threats identified in Section 7 can be adequately addressed. This can be for a number of reasons including financial, legal, or capacity restrictions.

10.1. Ecological weed control

The aim of weed control at this KNE site is to reduce the density and distribution of targeted plant species that adversely impact upon the structure and function of native plant communities present. Improving the structure and function of these communities will in turn improve the habitat for native birds. Weed control focusses on species having the most impact on the values identified. All ecological weed control is undertaken by Greater Wellington's Biosecurity department on an annual basis.

Marram, kikuyu and tall fescue will be controlled with herbicide at Pimelea Point (operational area C) to release competitive pressure on the rare plant species sand daphne and native rushland communities. Gorse, lupin, pampas and wilding pine will also be controlled here with herbicide.

Wilding pine, gorse, pampas, karo, lupin and tall fescue will be controlled at Ōkau Stream and dunes (operational area F).

Groundcover weeds such as gazania, agapanthus, pampas, blackberry and cape ivy will be controlled with herbicide at the Sandy Bay dunes (operational area G).

As resources allow, control operations may be undertaken around the Mātaikonā River (operational area A), Suicide Rock (operational area D) and Mātaikonā dune system (operational area E) to expand the weed control coverage within the KNE site and to link with control undertaken in other operational areas.

10.2. Revegetation

The aim of revegetation at the KNE site is to improve the structure, composition and function of native plant communities. This will in turn improve the habitat for native birds. This work is a key aspect of Objective 2 and is in part a function of working in a long, narrow physical area. It is hoped that the Mātaikonā Community group may become involved in revegetation works in future.

Revegetation is undertaken using two strategies: firstly by replacing pest plants with eco-sourced native plants and secondly by planting species that would have likely occurred on the site or been more widespread in the past.

Approximately 400 eco-sourced plants will be planted each winter in various operational areas. The Greater Wellington Biodiversity department will plan and provide the plants and the Biosecurity department will undertake the planting. Plant protectors will be used to protect new restoration plantings from rabbit and hare browsing.

Replanting work will be carried out at the Ōkau Stream estuary and riparian area (operational area F), using species such as swamp flax (*Phormium tenax*), coastal tree daisy, *Olearia virgata*, toetoe, cabbage tree and karamū (*Coprosma robusta*). Foredune planting with spinifex will be carried out in the dunes at the Ōkau Stream (operational area F).

Backdunes species such as sand coprosma (*Coprosma acerosa*), matagouri (*Discaria toumatou*) and taupata (*Coprosma repens*) will be planted at the Sandy Bay dunes (operational area G).

Depending on planting survival rates, weed control success and available resources, planting will continue in both these sites for the duration of this KNE plan.

Foredune species such as pīngao and spinifex and backdune species such as sand coprosma, matagouri, sand daphne, wīwī and swamp flax may be replanted in the Mātaikonā village dunes (operational area B) as resources allow and progress in made in other areas. Other operational areas may also be included for revegetation work as resources or opportunities allow.

Below are the details of the revegetation work that will be undertaken in the Mātaikonā KNE site. Plant species to be used are listed and the table identifies numbers of plants that will be used and all costs associated with the planting programme. A list of plants to be used in any revegetation planting can be found in Appendix 4.

Table 4: Summary of revegetation planting at the Mātaikonā KNE site

Operational area	Timing (year and month)	Total number of plants	Management requirements
F	June annually	250	Site prep; post-planting release
G	June annually	150	None

11. Operational delivery schedule

The operational delivery schedule shows the actions planned to achieve the stated objectives for the Mātaikonā KNE site, and their timing and cost over the five-year period from 1 July 2019 to 30 June 2024. The budget is indicative only and subject to change. A map of operational areas can be found in Appendix 1 (see Map 3).

Table 5: Five-year operational plan for the Mātaikonā KNE site

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Annual resourcing
1, 3	EW-1 EW-2 EW-3	Ecological weed control	C, F, G	GWRC Biosecurity department	Coastal weed control to reduce pressure on native plants and allow for native revegetation planting	Reduction in abundance and distribution of target ecological weed species	$7,000
1, 2, 3	EW-1 EW-2 EW-3	Restoration planting	F, G	GWRC Biodiversity and Biosecurity departments	Approximately 400 eco-sourced plants planted annually, supplied and planted by Greater Wellington	Target of 70% plant survival in year one; Biodiversity value and connectivity is improving	$3,000
Total							**$10,000**

12. Funding contributions

12.1. Budget allocated by Greater Wellington

The budget is indicative only and subject to change.

Table 6: Greater Wellington allocated budget for the Mātaikonā KNE site

Management activity	Timetable and resourcing
Ecological weed control	$4,500
Revegetation	$3,000
Total	**$7,500**

12.2. Budget allocated by Masterton District Council

The budget is subject to confirmation through MDC's long term planning process.

Table 7: MDC allocated budget for the Mātaikonā KNE site

Management activity	Timetable and resourcing
Ecological weed control	$2,500
Total	**$2,500**

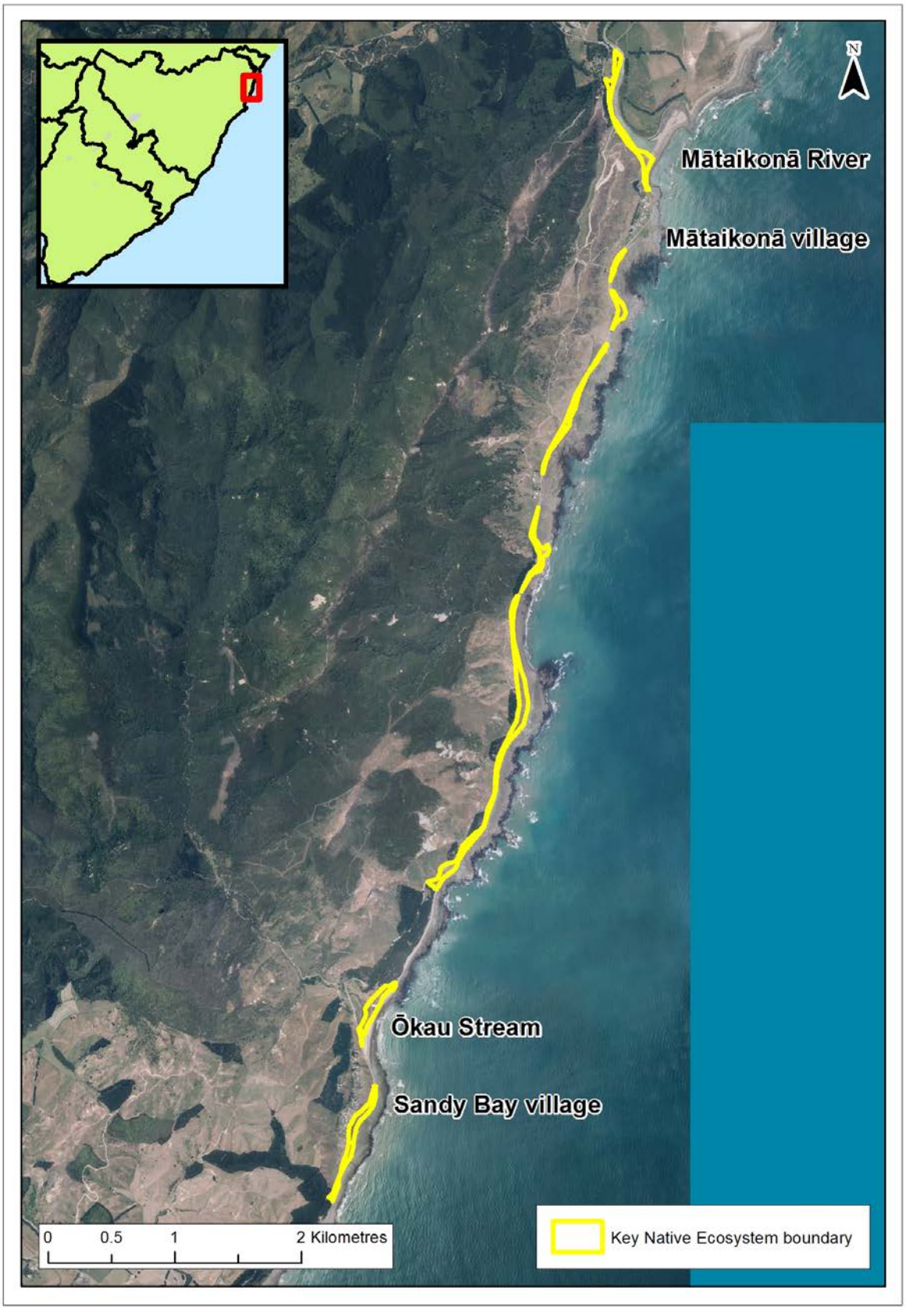
13. Future opportunities

13.1. Community group or volunteer opportunities

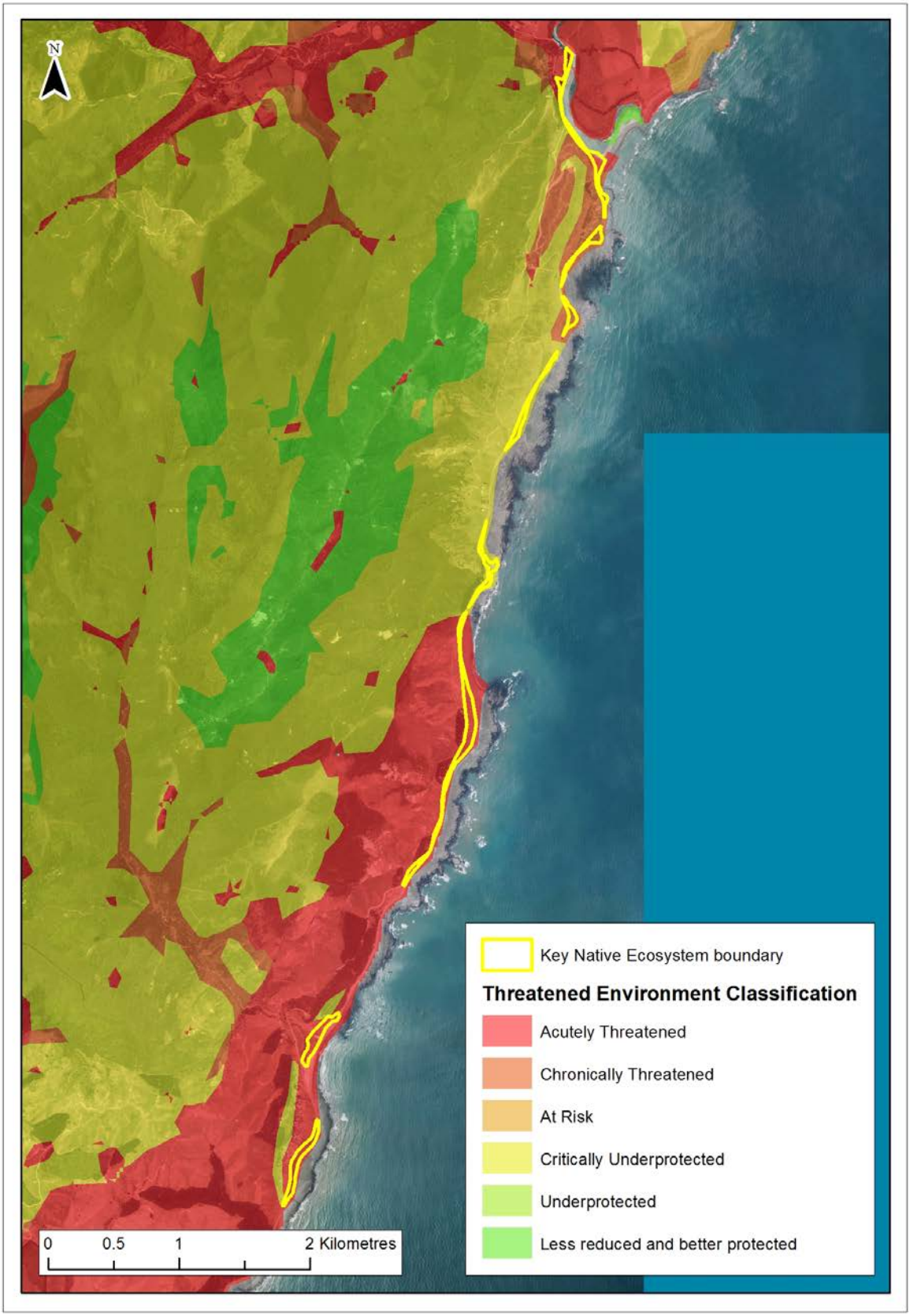
Greater Wellington will look to support any initiatives by the Mātaikonā Community group or other interested parties including mana whenua to get involved in biodiversity management activities such as pest plant control, pest animal control and revegetation works.

As there is currently no pest animal control being done any community action in this area would be a valuable contribution to biodiversity management in this KNE site.

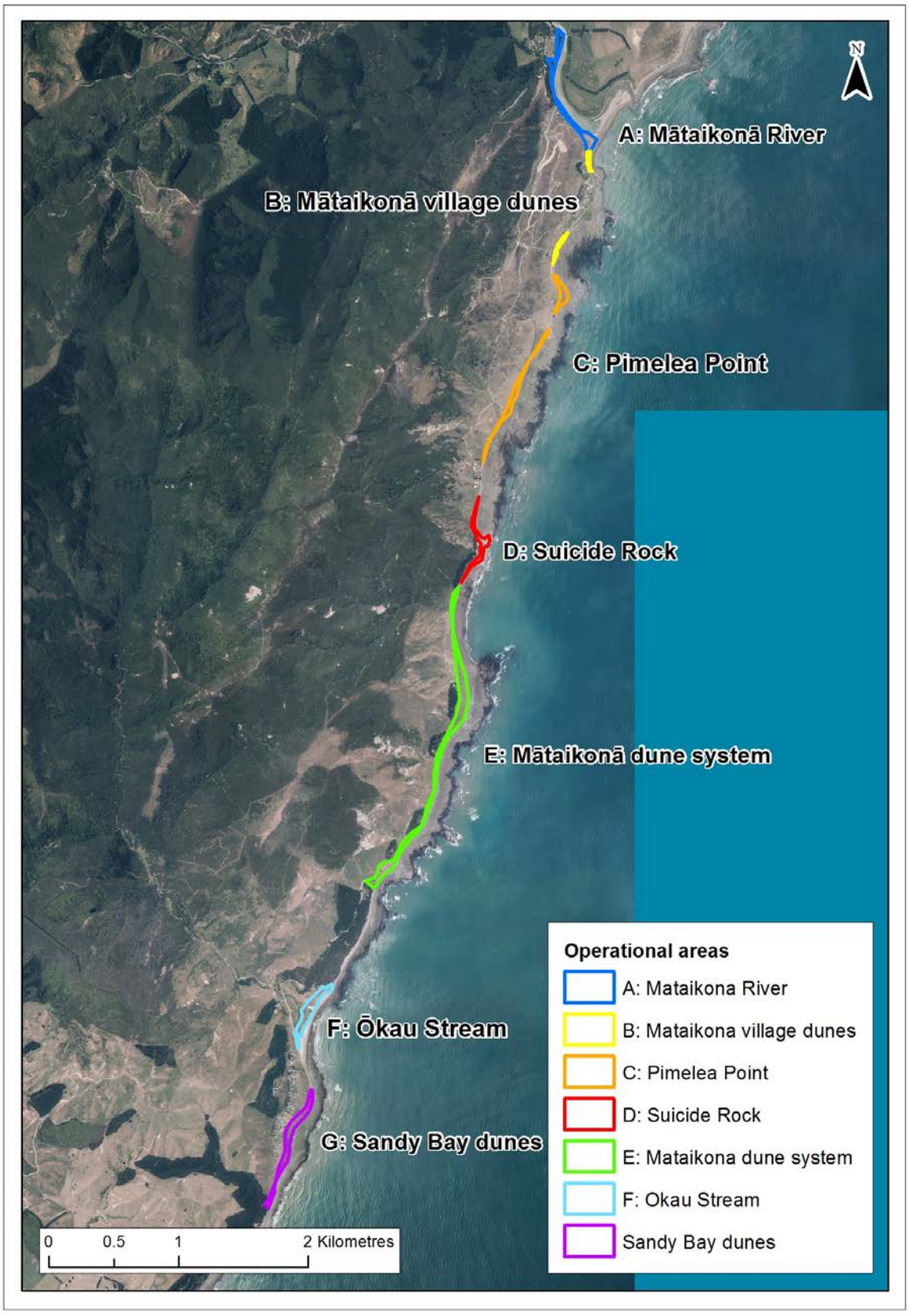
Appendix 1: Site maps



Map 1: The Mātaikonā KNE site boundary



Map 2: Land Environment New Zealand threat classifications for the Mātaikonā KNE site



Map 3: Operational areas in the Mātaikonā 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[44]. 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 KNE site.

Table 8: Threatened and At Risk species at the Mātaikonā KNE site

Scientific name	Common name	Threat status	Observation
Plants(vascular)[45]			
Coprosma acerosa	Sand coprosma	At Risk - Declining	Eastern Wairarapa Ecological District report[46]
Ficinia spiralis	Pīngao	At Risk - Declining	Eastern Wairarapa Ecological District report
Pimelea arenaria	Sand daphne	At Risk - Declining	Eastern Wairarapa Ecological District report
Birds[47]			
Charadrius bicinctus bicinctus	Banded dotterel	Threatened - Nationally Vulnerable	Rebergen, A. 2012[48]
Chroicocephalus bulleri	Black-billed Gull	Threatened - Nationally Critical	Rebergen, A. 2012
Chroicocephalus scopulinus	Red-billed Gull	Threatened - Nationally Vulnerable	eBird records
Haematopus unicolor	Variable oystercatcher	At Risk - Recovering	Rebergen, A. 2012
Himantopus himantopus	Pied stilt	At Risk - Declining	Rebergen, A. 2012
Hydroprogne caspia	Caspian Tern	Threatened - Nationally Vulnerable	eBird records
Phalacrocorax carbo	Black shag	At Risk - Naturally Uncommon	eBird records
Phalacrocorax varius	Pied shag	Threatened - Nationally Vulnerable	eBird records
Platalea regia	Royal spoonbill	At Risk - Naturally Uncommon	McArthur & Lawson, 2014[49]
Sterna striata	White-fronted tern	At Risk – Declining	J. McCarthy pers.obs 2018
Freshwater fish[50]			
Anguilla dieffenbachia	Longfin eel	At Risk - Declining	Taylor & Kelly, 2003[51]
Cheimarrichthys fosteri	Torrentfish	At Risk - Declining	Taylor & Kelly, 2003
Galaxias brevipinnis	Kōaro	At Risk - Declining	Taylor & Kelly, 2003

Scientific name	Common name	Threat status	Observation
Galaxias maculatus	Inanga	At Risk - Declining	Taylor & Kelly, 2003
Gobiomorphus huttoni	Redfin bully	At Risk - Declining	Taylor & Kelly, 2003
Invertebrates (Araneae – spiders)[52]			
Lactrodectus katipo	Katipō	At Risk - Declining	Park, M. 2011 pers. obs.

Appendix 3: Regionally threatened plant species list

The following table lists regionally threatened species that have been recorded in the Mātaikonā Coast KNE site. Native plant species have been identified in the Plant Conservation Strategy, Wellington Conservancy 2004-2010[53].

Table 9: Regionally threatened species recorded in the Mātaikonā Coast KNE site

Scientific name	Common name	Threat status	Observation
Plants[54]			
Pimelea arenaria	Sand daphne	Regionally vulnerable	Eastern Wairarapa Ecological District report[55]
Schoenoplectus tabernaemontanii	Three-square; Kuawa	Sparse	Eastern Wairarapa Ecological District report.

Appendix 4: Revegetation plant list

The following table lists species which will be used in any revegetation planting at the Mātaikonā Coast KNE site.

Table 10: Revegetation plant list for the Mātaikonā Coast KNE site

Scientific Name	Common Name	Habitat type
Coprosma acerosa	Sand coprosma	Dunes
Coprosma repens	Taupata	Dunes
Cordyline australis	Cabbage tree	Estuary/riparian
Discaria toumatou	Matagouri	Dunes
Ficinia spiralis	Pīngao	Dunes
Olearia solandri	Coastal tree daisy	Backdune/riparian/dunes
Phormium cookianum	Coastal flax	Dunes
Phormium tenax	Swamp flax	Estuary/riparian
Pimelea arenaria	Sand daphne	Dunes
Plagianthus divaricatus	Saltmarsh ribbonwood	Estuary/riparian
Spinifex sericeus	Spinifex	Dunes

References

[1] New Zealand legislation. 1991. Resource Management Act 1991.
[2] Greater Wellington Regional Council. Greater Wellington Regional Council Long Term Plan: 2018 – 2028.
[3] Greater Wellington Regional Council. 2016. Greater Wellington Regional Council Biodiversity Strategy. http://www.gw.govt.nz/assets/council-publications/Biodiversity-Strategy-2016.pdf
[4] Greater Wellington Regional Council. 2015. Proposed Natural Resources Plan. P. 299.
[5] Beadel SM, Bibby CJ, Perfect AJ, Rebergen AL, Sawyer JWD. 2004. Eastern Wairarapa Ecological District: survey report for the Protected Natural Areas programme. Department of Conservation, Wellington Conservancy, unabridged. Appendix 7. p. 262.
[6] Walker S, Cieraad E, Grove P, Lloyd K, Myers S, Park T, Porteous T. 2007 Guide for users of the threatened environment classification, Version 11, August 2007 Landcare Research New Zealand. 34 p. plus appendix.
[7] Walker S, Cieraad E, Grove P, Lloyd K, Myers S, Park T, Porteous T. 2007. Guide for the users of the Land Environments Classification. Landcare Research Manaaki Whenua.
[8] McEwen MW (compiler). 1987. Ecological Regions and Districts of New Zealand. New Zealand Biological Resources Centre Publication No. *5*. Department of Conservation, Wellington.
[9] Department of Conservation. 1987. Ecological Regions and Districts of New Zealand.
[10] Ausseil A-G, Gerbeaux P, Chadderton W, Stephens T, Brown D, Leathwick J. 2008. Wetland ecosystems of national importance for biodiversity. Landcare Research Contract Report LC0708/158 for Chief Scientist, Department of Conservation.
[11] Holdaway RJ, Wiser SK and Williams PA. 2012. Status assessment of New Zealand's naturally uncommon ecosystems. Conservation Biology 26(4): 619-629.
[12]New Zealand Threat Classification System (NZTCS) http://www.doc.govt.nz/about-us/science-publications/conservation-publications/nz-threat-classification-system/
[13] Todd M, Graeme C, Kettles H, Sawyer J. 2011. Estuaries in Wellington Hawke's Bay Conservancy (excluding Hawke's Bay and Chatham Islands Areas) - Current status and future management. Department of Conservation, Wellington. 275 p.
[14] Greater Wellington Regional Council. 2015. Proposed Natural Resources Plan. http://www.gw.govt.nz/regional-plan-review/
[15] McArthur N, Lawson J. 2014. Coastal and freshwater sites of significance for indigenous birds in the Wellington region, September 2013. No. Publication No. GW/ESCI-T-14/67. Environmental Science Department, Greater Wellington Regional Council, Wellington.
[16] McArthur N, Lawson J. 2014. Coastal and freshwater sites of significance for indigenous birds in the Wellington region, September 2013. No. Publication No. GW/ESCI-T-14/67. Environmental Science Department, Greater Wellington Regional Council, Wellington.
[17] Todd M, Graeme C, Kettles H, Sawyer J. 2011. Estuaries in Wellington Hawke's Bay Conservancy (excluding Hawke's Bay and Chatham Islands Areas) - Current status and future management. Department of Conservation, Wellington. 275 p.
[18] Todd M, Graeme C, Kettles H, Sawyer J. 2011. Estuaries in Wellington Hawke's Bay Conservancy (excluding Hawke's Bay and Chatham Islands Areas) - Current status and future management. Department of Conservation, Wellington. 275 p.
[19] M. Park, pers obs 2011.
[20] J. McCarthy, per sobs 2018.
[21] Murphy E, Maddigan F, Edwards B, Clapperton K. 2008. Diet of stoats at Okarito Kiwi Sanctuary, South Westland, New Zealand. New Zealand Journal of Ecology 32(1): 41-45.
[22] King CM, Murphy EC 2005. Stoat. in: King CM ed. The handbook of New Zealand mammals. Oxford University Press. Pp. 261-287.
[23] Ragg JR. 1998. Intraspecific and seasonal differences in the diet of feral ferrets (*Mustela furo*) in a pastoral habitat, east Otago, New Zealand. New Zealand Journal of Ecology 22(2): 113 – 119.

[24] Clapperton BK, Byron A. 2005. Feral ferret. In: King CM ed. The handbook of New Zealand mammals. Oxford University Press. Pp. 294-307.
[25] King CM. 2005. Weasel. In: King CM ed. The handbook of New Zealand mammals. Oxford University Press. Pp. 287-294.
[26] King CM, Flux M, Innes JG, Fitzgerald BM. 1996. Population biology of small mammals in Pureora Forest Park: 1. Carnivores (*Mustela erminea, M.furo, M.nivalis and Felis catus*). New Zealand Journal of Ecology 20(2): 241 – 251.
[27] King CM, Flux M, Innes JG, Fitzgerald BM. 1996. Population biology of small mammals in Pureora Forest Park: 1. Carnivores (*Mustela erminea, M.furo, M.nivalis and Felis catus*). New Zealand Journal of Ecology 20(2): 241 – 251.
[28] Reardon JT, Whitmore N, Holmes KM, Judd LM, Hutcheon AD, Norbury G, Mackenzie DI. 2012. Predator control allows critically endangered lizards to recover on mainland New Zealand. New Zealand Journal of Ecology 36(2): 141 – 150.
[29] King CM, Flux M, Innes JG, Fitzgerald BM. 1996. Population biology of small mammals in Pureora Forest Park: 1. Carnivores (*Mustela erminea, M.furo, M.nivalis and Felis catus*). New Zealand Journal of Ecology 20(2): 241 – 251.
[30] Gillies C, Fitzgerald BM 2005. Feral cat. In: King CM ed. The handbook of New Zealand mammals. Oxford University Press. Pp. 308-326.
[31] Jones C, Sanders MD. 2005. European hedgehog. In: King CM ed. The handbook of New Zealand mammals. 2nd edition. Melbourne, Oxford University Press. Pp. 81–94.
[32] Spitzen-van der Sluijs AM, Spitzen J, Houston D, Stumpel AHP. 2009. Skink predation by hedgehogs at Macraes Flat, Otago, New Zealand. New Zealand Journal of Ecology 33(2): 205-207.
[33] Jones C, Moss K, Sanders M. 2005. Diet of hedgehogs (*Erinaceus europaeus*) in the upper Waitaki Basin, New Zealand. Implications for conservation. New Zealand Journal of Ecology 29(1): 29-35.
[34] Jones C, Sanders MD. 2005. European hedgehog. In: King CM ed. The handbook of New Zealand mammals. 2nd edition. Melbourne, Oxford University Press. Pp. 81–94.
[35] Daniel MJ. 1973. Seasonal diet of the ship rat (*Rattus r. rattus*) in lowland forest in New Zealand. Proceedings of the New Zealand Ecological Society 20: 21-30.
[36] Innes JG. 2005. Ship rat. In: King CM ed. The handbook of New Zealand mammals. Oxford University Press. Pp. 187-203.
[37] Ruscoe WA, Murphy EC. 2005. House mouse. In: King CM ed. The handbook of New Zealand mammals. Oxford University Press. Pp. 204-221.
[38] Newman DG. 1994. Effect of a mouse *Mus musculus* eradication programme and habitat change on lizard populations on Mana Island, New Zealand, with special reference to McGregor's skink, *Cyclodina macgregori.* New Zealand Journal of Ecology 21: 443-456.
[39] Pekelharing CJ, Parkes JP, Barker RJ. 1998. Possum (*Trichosurus vulpecula*) densities and impacts on fuchsia (*Fuchsia excorticata*) in South Westland, New Zealand. New Zealand Journal of Ecology 22(2): 197-203.
[40] Nugent G, Sweetapple P, Coleman J, Suisted P. 2000. Possum feeding patterns: dietary tactics of a reluctant folivore. In: Montague TL ed. The brushtail possum: Biology, impact and management of an introduced marsupial. Lincoln, Manaaki Whenua Press. Pp. 10-19.
[41] Sweetapple PJ, Fraser KW, Knightbridge PI. 2004. Diet and impacts of brushtail possum populations across the invasion front in South Westland, New Zealand. New Zealand Journal of Ecology 28(1): 19-33.
[42] Norbury G, Flux JEC. 2005. Brown hare. in: King CM ed. The handbook of New Zealand mammals. Oxford University Press. Pp. 151-158.
[43] Smale MC, Dodd MB, Burns BR, Power IL. 2008. Long-term impacts of grazing on indigenous forest remnants on North Island hill county, New Zealand. New Zealand Journal of Ecology 32(1): 57 -66.
[44] Department of Conservation. 2008. New Zealand Threat Classification System manual.
[45] de Lange PJ, Rolfe JR, Champion PD, Courtney SP, Heenan PB, Barkla JW, Cameron EK, Norton DA, Hitchmough RA. 2013. Conservation status of New Zealand indigenous vascular plants, 2012. New Zealand Threat Classification Series 3. 70 p.
[46] Beadel S, Bibby CJ, Perfect AJ, Rebergen A, Sawyer JWD. 2004. Eastern Wairarapa Ecological District. Survey report for the Protected Natural Area Programme. Department of Conservation, Wellington. 382 p.

[47] Robertson HA, Baird K, Dowding JE, Elliot GP, Hitchmough RA, Miskelly CM, McArthur N, O'Donnell CFJ, Sagar PM, Scofield P, Taylor GA. 2017. Conservation status of New Zealand birds, 2016. New Zealand Threat Classification Series 19. 27p.
[48] Rebergen A. 2012. Birds on Wairarapa rivers and coast in 2011-12 breeding season. Forest and Bird, Wellington.
[49] McArthur N, Lawson J. 2014. Coastal and freshwater sites of significance for indigenous birds in the Wellington region, September 2013. No. Publication No. GW/ESCI-T-14/67. Environmental Science Department, Greater Wellington Regional Council, Wellington.
[50] Goodman JM, Dunn NR, Ravenscroft PJ, Allibone RM, Boubee JAT, David BO, Griffiths M, Ling N, Hitchmough RA, Rolfe JR. 2014. Conservation status of New Zealand freshwater fish, 2013. New Zealand Threat Classification Series 7. 12 p.
[51] Taylor MJ, Kelly GR. 2003. Inanga spawning habitats in the greater Wellington Region. Part 2 Wairarapa. NIWA Client Report No. CHC01/67. Prepared for the Greater Wellington Regional Council. 34 p.
[52] Sirvid PJ, Vink CJ, Wakelin MD, Fitzgerald BM, Hitchmough RA, Stringer IAN. 2012. The conservation status of New Zealand Araneae. New Zealand Entomologist 35(2): 85–90.
[53] Sawyer JWD. 2004. Plant conservation strategy, Wellington Conservancy (excluding Chatham Islands), 2004–2010. Department of Conservation, Wellington. 91 p.
[54] Sawyer JWD. 2004. Plant Conservation Strategy. Wellington Conservancy (excluding Chatham Islands) 2004-2010. Department of Conservation, Wellington. 91 p.
[55] Beadel S, Bibby CJ, Perfect AJ, Rebergen A, Sawyer JWD. 2004. Eastern Wairarapa Ecological District. Survey report for the Protected Natural Area Programme. Department of Conservation, Wellington. 382 p.

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