Key Native Ecosystem Plan for Peka Peka Coast

2018-2021

KNE
KEY NATIVE ECOSYSTEM

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. 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/ 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 operational plans prepared by Greater Wellington's Biodiversity department. Greater Wellington works with landowners, mana whenua and other operational delivery providers to achieve mutually beneficial goals.

2. Peka Peka Coast Key Native Ecosystem site

Peka Peka Coast KNE site (39 ha) is located between Peka Peka Beach and Waikanae Beach townships, on the Kāpiti Coast (see Appendix 1, Map 1). The KNE site comprises Te Kōwhai Stream estuary, a 3 kilometre strip of coastline and, the Pharazyn Reserve coastal dunelands and associated wetlands area. It includes various coastal ecosystems including wetlands, sand dunes and a relatively unmodified estuary[2]. These ecosystems contain threatened and uncommon coastal plants and bird-life.

3. Parties involved

Greater Wellington works in collaboration with landowners and other interested parties (management partners and stakeholders) where appropriate to achieve shared objectives for the site. In preparing this plan Greater Wellington has sought input from landowners and relevant stakeholders, and will continue to involve them as the plan is implemented.

3.1 Landowner

Kāpiti Coast District Council (KCDC) owns and maintains all the lands within the KNE site, including the Pharazyn Reserve and the Te Kōwhai Stream estuary, which is part of the wider Ngāwhakangutu Reserve[3].

3.2 Operational delivery

The management partners are KCDC and Greater Wellington.

KCDC funds the management of biodiversity in parts of the KNE site as an Ecological Site of Significance in accordance with KCDC's District Plan[4] and the Pharazyn Reserve Landscape and Ecological Restoration Plan[5]. The KCDC Coastal Restoration Fund and/or the Pharazyn Reserve Management Fund are available funding sources however, these are contestable budgets decided on an annual basis.

Within Greater Wellington, the Biodiversity and Biosecurity departments are actively involved in the management of the KNE Site. The Biodiversity department plans and coordinates biodiversity management activities and provides biodiversity advice. The Biosecurity department carries out pest control activities.

3.3 Mana Whenua partners

Peka Peka Coast KNE site contains a site of significance for Ngā Hāpu o Ōtaki (see Table 1) and they are aware that their areas of interest are located on territorial authority land. Greater Wellington will provide contact details of landowners to Ngā Hāpu o Ōtaki if they wish to consult directly with landowners about the values at the site.

Table 1: Ngā Hāpu o Ōtaki sites of significance in Peka peka Coast KNE site[6]

Sites of significance	Mana whenua values
Kōwhai Stream and mouth	mahinga kai, ara waka, papa kāinga, puna raranga, tohu ahurea, kauhoe, wai ora, wai tai, wāhi whakawātea, wāhi whakarite

3.4 Stakeholders

Three volunteer community groups are key stakeholders for the KNE site. These are the Pharazyn Reserve Focus Group, the Peka Peka Guardians (who focus on the Peka Peka beach area) and the Peka Peka Restoration Group (which focus on restoring an area of dunes adjacent to Marram Way).

4. Ecological values

Ecological values are a way to describe native biodiversity found at a site, and what makes it special. These ecological values can be various components or attributes of ecosystems that determine an area's importance for the maintenance of regional biodiversity. Examples of values are the provision of important habitat for a threatened species, or particularly intact remnant vegetation typical of the ecosystem type. The ecological values of a site are used to prioritise allocation of resources to manage KNE sites within the region.

The KNE site is located in the Foxton Ecological District that is typically characterised by coastal sand dune ecosystems [7]. Foxton ecological district has warm summers and mild winters. It has annual rainfall of 800-1200 mm, prevailing westerly to north-westerly winds, and relatively frequent gales.

The KNE site comprises a degraded but relatively unmodified sand dune and estuarine landscape with elements of original native vegetation cover still present.

Of note in recognising the ecological values at the KNE site are the following:

Uncommon ecosystems: Unmodified estuaries, active sand dunes and stable sand dunes are Naturally Rare ecosystem types at a national scale[8]. Estuaries have been classified as Vulnerable and the other types of ecosystems as Endangered[9]. Wetlands are considered uncommon in the Wellington region with less than 3% of the original extent remaining today [10].

Threatened environments: The Threatened Environment Classification[11] indicates that most of the KNE site is classified as Chronically Threatened, having between 10-20% of the original cover of native vegetation remaining.

Threatened species: At a national level, three At Risk plant species, six Threatened or At Risk bird species and two At Risk freshwater fish species have been recorded within the KNE site. Nationally threatened species recorded at the KNE site are listed in Appendix 2. On a regional level, two plant species are considered threatened, and are listed in Appendix 3.

The Singers and Rogers[12] classification of pre-human vegetation indicates the KNE site comprised three habitat types. Spinifex-pīngao grassland/sedgeland (DN2) would have dominated the foredunes. Species such as mānuka (*Leptospermum scoparium*), kānuka (*Kunzea amathicola*), tutu (*Coriaria arborea*), toetoe (*Cortaderia toetoe*) and tauhinu (*Ozothamnus leptophyllus*) would have been found here. A coastal sand dune mosaic (DN2/5) which contains some characteristics of spinifex-pīngao grassland/sedgeland (DN2) and oioi, knobby clubrush sedgeland (DN5) was present on the back dunes of Pharazyn Reserve and Te Kōwhai estuary. According to the botanist Cockayne, in and amongst these dunes small woods, including *Cordyline australis*, *Macropiper excelsum*, *Sophora microphyla* and *Pittosporum tenuifolium,* would have been present here[13]*.* A kahikatea-pukatea forest (WF8) would have been present in the wetland areas of Te Kōwhai estuary and the wetlands in the east of the Pharazyn Reserve.

The KNE site currently comprises aspects of the original vegetation described above within the three main ecosystem types now present. These are: the Te Kōwhai estuary, active foredunes and, backdunes with associated wetland swales (depressions between ridges). These are described in more detail below.

4.1 Te Kōwhai estuary

The plant communities of the estuary include mainly native sedges and rushes with the occasional harakeke (*Phormium tenax*), toetoe and taupata (*Coprosma repens*). The lower estuary is dominated by three-square (*Schoenoplectus pungens*) and sand sedge (*Carex pumila*), with small patches of bachelor's buttons (*Cotula coronipifolia*). The upper estuary is dominated by *Carex geminata,* which forms thick bands adjacent to the stream edge amongst a mosaic of native rushes, reeds, sedges and exotic grasses.

The estuary is known to support longfin eel (*Anguilla dieffenbachia*), shortfin eel (*A. australis*), banded kokupu (*Galaxias fasciatus*) and inanga (*Galaxias maculatus*)[14] and is likely to be important for other migratory fish species.

4.2 Active foredunes

The native vegetation present in the foredunes largely consists of spinifex (*Spinifex hirsutus*), pīngao (*Ficinia spiralis*), sand gossamer grass (*Lachnogrostis billiardierei*), sand piripiri (*Acmaena pallidus*), shore convolvulus (*Calystegia soldanella*) and wīwī (*Ficinia nodosa*). Taupata, pōhuehue (*Muehlenbeckia complexa*), toetoe and harakeke are present but distributed sparsely across this ecosystem.

The foredunes at Marram Way have had native species planted such as pīngao, speckled sedge (*Carex testacea*), sand tussock (*Poa billardierei*) and New Zealand sand daphne (*Pimelia prostrata* subsp*. prostrata*).

4.3 Backdunes with wetland swales

The backdunes in the Te Kōwhai and Pharazyn areas are currently in a degraded state with poor native cover. However, pōhuehue, taupata, native spinach (*Tetragonia trigyna*) and bracken fern (*Pteridium esculatum*) and the occasional mature kānuka are present. In the back dunes of the Pharazyn Reserve and Marram Way areas large scale revegetation has been underway for several years bringing a measure of native plant presence and diversity back into these areas.

The wetland swale within Pharazyn Reserve contains raupō (*Typha orientalis*) in standing water with other native species including harakeke, wīwī (*Juncus edgariae*), *Isolepis prolifer*, giant umbrella sedge (*Cyperus ustulatus*) and pūrei (*Carex secta*) present in damp areas.

Across the KNE site shorebirds including Caspian tern (*Hydroprogne caspia*), red-billed gull (*Larus novaehollandiae*), South Island oystercatcher (*Haematopus finschi*), pied stilt, (*Himantopus himantopus leucocephalus*), black backed gull (*Larus dominicanus*), white-fronted tern (*Sterna sterna striata*), banded dotterel (*Charadrius bicinctus*) and variable oystercatcher (*Haemotopus unicolour*) have all been observed[15].

5. Key threats to ecological values at the site

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

Ecological weeds are widespread throughout the KNE site and are considered the greatest threat to the ecological values of the dune and estuarine ecosystems. The key weed species are marram grass (*Ammophila arenaria*), boxthorn (*Lycium ferocissimum*), pampas grass (*Cortaderia selloana/C. jubata*), blackberry (*Rubus fruticosus* agg.) and reed sweet-grass (*Glyceria maxima*) that out-compete native plant species and prevent natural regeneration.

Marram grass is described as an ecological transformer. It alters sand dune structure and function creating higher, steeper dune systems than would naturally occur in a native spinifex-dominated dunes system. Furthermore, marram does not stabilise sand as well as spinifex, and given the higher profile of marram-created dunes erosion often occurs. Spinifex dunes also have the advantage of being able to recover after storm events whereas marram grass does not have the same ability.

Informal recreation activities, including off road motor biking and 4-wheel driving, have caused erosion, spreading of ecological weeds and habitat loss.

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

Table 2: Threats to ecological values present at Peka Peka Coast KNE site

The codes alongside each threat correspond to activities listed in the operational delivery schedule (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 (see Map 3).

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
Ecological weeds		
EW-1(*)	Aquatic ecological weed species such as reed sweet-grass, mercer grass (*Paspalum distichum*), lagarosiphon* (*Lagarosiphon major*) and monkey musk* (*Mimulus guttatus*) choke waterways and outcompete native plants.	A and E
EW-2	Climbing and creeping ecological weeds species such as blackberry, convolvulus (*Convolvulus* spp.), climbing dock (*Rumex sagittatus*) and cape ivy (*Senecio angulatus*) smother and outcompete native vegetation, suppressing natural regeneration.	Entire KNE site
EW-3	Ground-covering ecological weed species such as the exotic ice plant (*Carpobrotus edulis*), agapanthus (*Agapanthus praecox*) and purple groundsel (*Senecio elegans*) suppress natural regeneration.	Entire KNE site
EW-4	Exotic grasses such as marram grass, pampas and kikuyu (*Pennisetum clandestinum*) form thick swards which suppress native plant regeneration.	Entire KNE site
EW-5	Woody weed species such as banksia (*Banksia integrifolia*), lupin (*Lupinus arboreus*), boxthorn, Scots pine (*Pinus silvestris*), boneseed (*Chryanthemoides monilifera*), white correa (*Correa alba*), brush wattle (*Paraserianthes lophantha*), evergreen buckthorn (*Rhamnus alaternus*) and the non-local native karo (*Pittosporum crassifolium*) outcompete and displace native vegetation and can alter ecosystem function.	Entire KNE site
Pest animals		
PA-1*	Possums (*Trichosurus vulpecula*) browse palatable canopy vegetation until it can no longer recover[16,17]. This destroys the forest's structure, diversity and function. Possums may also prey on native birds[18] and invertebrates.	Entire KNE site
PA-2	Mustelids (stoats[19,20] (*Mustela erminea*), ferrets[21,22] (*M. furo*) and weasels[23,24] (*M. nivalis*) prey on native birds, lizards and invertebrates, reducing their breeding success and potentially causing local extinctions.	Entire KNE site
PA-3	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[25,26].	Entire KNE site
PA-4*	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[27,28].	Entire KNE site
PA-5	Hedgehogs (*Erinaceus europaeus*) prey on native invertebrates[29], lizards[30] and the eggs[31] and chicks of ground-nesting birds[32].	Entire KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
PA-6*	Rabbits (*Oryctolagus cuniculus*) and hares (*Lepus europaeus*) graze on palatable native vegetation and prevent natural regeneration in some environments[33]. 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 forest areas browsing and reducing regenerating native seedlings.	Entire KNE site
PA-7*	Feral, stray and domestic cats (*Felis catus*) prey on native birds[34], lizards[35] and invertebrates[36], reducing native fauna breeding success and potentially causing local extinctions[37].	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*	Dumping of garden waste introduces ecological weeds. Ecological weeds can dominate native plant species and prevent natural regeneration.	Entire KNE site
HA-3*	Creation of informal beach access paths by residents living adjacent to the KNE and by the general public, causing damage to native plants through trampling, and dune erosion.	Entire KNE site
Other threats		
OT-1	Habitat degradation and fragmentation has increased the edge effect on the ecosystem exposing the KNE site to increased light, wind and plant invasion, and greater susceptibility to the effects of extreme weather events and climate change.	Entire KNE site

*Threats marked with an asterisk are not addressed by actions in the operational delivery schedule

The codes alongside each threat correspond to activities listed in the operational delivery schedule (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 (see Map 2).

6. Objectives

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

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

1. **To improve the structure* and function† of native plant communities**
2. **To improve the habitat for native birds**

* 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 provisioning of food and habitat for animal species.

7. Operational activities

Operational activities are targeted to work towards the objectives above by responding to the threats outlined in Section 2. 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 3).

It is important to note that not all threats identified in Section 2 can be adequately addressed. This can be for a number of reasons including financial, legal, or capacity restrictions.

Several management/restoration plans have been prepared for specific areas within the KNE site. These include the Pharazyn Reserve Landscape and Ecological Restoration Plan 2011[38], the Peka Peka Dunes 5-year Restoration Plan[39], and the Ngāwhakangutu Reserve Management Plan 2012[40]. These plans guide the work undertaken within the KNE site and provide more detail on restoration planting.

The primary management activities undertaken in the KNE site are ecological weed control and restoration planting. Pest animals are also controlled and recreational activities are managed, but these activities are limited in scope.

The KNE site has been divided into five Operational Areas, A-F (See Appendix 1, Map 2). These are:

A: Te Kōwhai estuary and associated dunelands (11.3 ha)

B: Foredunes from Te Kōwhai estuary to Peka Peka Rd (4.8 ha)

C: Marram Way foredunes (3.3 ha)

D: Foredunes between Pharazyn dunes and Marram Way foredunes (4.2 ha)

E: Pharazyn Reserve dunes (14 ha)

7.1 Ecological weed control

Ecological weed control will be undertaken across the KNE site to increase the native plant dominance and provide conditions for natural regeneration. In order to achieve this, an ecological weed control approach has been developed that has identified and prioritised ecological weeds present within the KNE site based on the severity of ecological impact a weed species has.

As a result, Greater Wellington will control widespread weed species with high ecological impact such as boxthorn, pampas, blackberry and gorse across the entire KNE site annually.

In 2018/19, Greater Wellington will undertake control of marram grass, ground-covering weeds (eg, iceplant), and woody weeds (eg, boxthorn) on the foredunes to allow spinifex and pīngao to naturally re-colonise this ecosystem. This activity will commence from the seaward edge of the foredunes, working inland. Pampas will also be controlled as needed to allow native regeneration to take place. These activities will continue throughout the 2019/20 and 2020/21 years as follow up work.

In 2018/19, Greater Wellington will undertake control of marginal aquatic weeds such as mercer grass in Operational Area E, increasing this work into Operational Area A the following years; 2019/20 and 2020/21. Kikuyu grass will also be targeted in Operational Area E as needed to help encourage natives to re-establish in specified areas.

Each year weed control will take place in Operational Areas A and C in preparation of revegetation planting. This work will include, but is not limited to, spot spraying of exotic grasses and ground covering weeds.

The operational delivery schedule (Table 3) contains more information about the specific requirements in each operational area. Appendix 4, Table 8 contains a full list of weed species and their ecological impact.

7.2 Pest animal control

A small predator control network of seven DOC 200 predator kill-traps has been installed in Operational Area E (Pharazyn Reserve) to control mustelids and rats.

The purpose of this network is to protect the native wetland and shorebird populations from predation. The traps are serviced monthly by the Pharazyn Reserve Group with bait supplied by KCDC.

7.3 Revegetation

KCDC coordinates all revegetation across the KNE site in accordance with the Peka Peka Five-Year Restoration Plan[41] and the Pharazyn Reserve Landscape and Ecological Restoration Plan[42]. These documents should be referred to for detailed information about the revegetation project however; the broad principles are discussed below.

Revegetation is undertaken to increase native plant cover and to reintroduce absent native species within the KNE site. Revegetation will contribute to stabilising the degraded sand dune areas and will provide a seed source for on-going regeneration.

Given the presence of rabbits within the KNE site, all plantings will be protected using rabbit guards.

KCDC, working with the Peka Peka Restoration Group, will undertake annual revegetation planting within Operational Area C (the Marram Way Dunes) using 200-300 eco-sourced plants including species such as shore spurge, pīngao, and sand coprosma (*Coprosma acerosa*) to compliment the native species currently present. Plants for this planting area will be chosen from the following species:

- Harakeke (*Phormium tenax*)
- Pīngao (*Ficinia spiralis*)
- Wīwī (*Ficinia nodosa*)
- Speckled sedge (*Carex testacea*),
- Sand tussock (*Poa billardierei*)
- New Zealand sand daphne (*Pimelia prostrata* subsp. *prostrata*)

KCDC, with the Pharazyn Reserve Focus Group will plant 500 native plant species annually within Operational Area E (the Pharazyn Reserve). Plants for this planting area will be chosen from the following species:

- Red matipo (*Myrsine australis*)
- Taupata (*Coprosma repens*)
- Ngaio (*Myoporum laetum*)
- Toetoe (*Austroderia toetoe*)
- Harakeke (*Phormium tenax*)
- Kānuka (*Kunzea amathicola*)
- Akeake (*Dodonaea viscosa*)

KCDC will plant 100 harakeke plants in Operational Area A (Te Kōwhai Estuary) annually.

8. Operational delivery schedule

The operational delivery schedule shows the actions planned to achieve the stated objectives for the Peka Peka Coast KNE site, and their timing and cost over the three-year period from 1 July 2018 to 30 June 2021. The budget for the 2019/20 and 2020/21 years are indicative only and subject to change. A map of operational areas can be found in Appendix 1 (see Map 3).

Table 3: Three year operational plan for the Peka Peka Coast KNE site

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable & resourcing		
							2018/19	2019/20	2020/21
1	EW-4, EW-5	Ecological weed control	Entire KNE site	Biosecurity department	Control of grasses such as marram and pampas. Control of woody weeds such as boxthorn and boneseed, as well as non-local native species	Reduction in abundance of target weed species	$4,000	$4,000	$5,500
1	EW-1	Ecological weed control	A and E	Biosecurity department	Control of marginal aquatic weeds including reed sweet grass & mercer grass	Reduction in abundance of target weed species	$500	$1,000	$500
1	EW-2, EW-3	Ecological weed control	Entire KNE site	Biosecurity department	Rolling back infestations from the coast inland of climbers such as blackberry and ground covering weeds such as iceplant	Reduction in abundance of target weed species	$5,000	$4,500	$4,000
1	EW-4	Ecological weed control	E	Biosecurity department	Targeted control of kikuyu grass	Reduction in abundance of target weed species	$500	$500	$500
1	OT-1	Ecological weed control	C	Biosecurity department	Site preparation ahead of revegetation planting including control of ecological weeds	Reduction in ecological weeds at planting site	$500	$500	$500
1	OT-1	Ecological weed control	A	Biosecurity department	Climber, woody weed and groundcover weed control, including site preparation for restoration planting	Reduction in abundance of target weed species	$1,000	$1,000	$500

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable & resourcing		
							2018/19	2019/20	2020/21
1	OT-1	Revegetation	A and C	KCDC	KCDC planting 200-300 native dune species annually with the Peka Peka Restoration Group in Area C KCDC planting of 100 harakeke plants annual in Area A	70% plant survival	$1,000*	$500*	$500*
1	OT-1	Revegetation	E	KCDC	Planting 500 native plants from a range of dune scrub and wetland species, as per planting plan	70% plant survival	$3,750^	$3,750^	$3,750^
2	PA-2, PA-3	Pest animal control	A, E	KCDC	Traps serviced monthly by the Pharazyn Reserve Group with bait supplied by KCDC	Reduce the impact of predators on native shorebirds	$200*	$200*	$200*
						Total	**$16,450*^**	**$15,950*^**	**$15,950*^**

*Subject to funding from the KCDC Coastal Restoration Fund

^Subject to KCDC Pharazyn Reserve Management Fund

9. Funding summary

Greater Wellington budget

The budgets for the 2019/20 and 2020/21 years are indicative only and subject to change.

Table 4: Greater Wellington allocated budget for the Peka Peka Coast KNE site

Management activity	Timetable & resourcing		
	2018/19	**2019/20**	**2020/21**
Ecological weed control	$6,500	$6,500	$6,500
Total	**$6,500**	**$6,500**	**$6,500**

KCDC budget

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

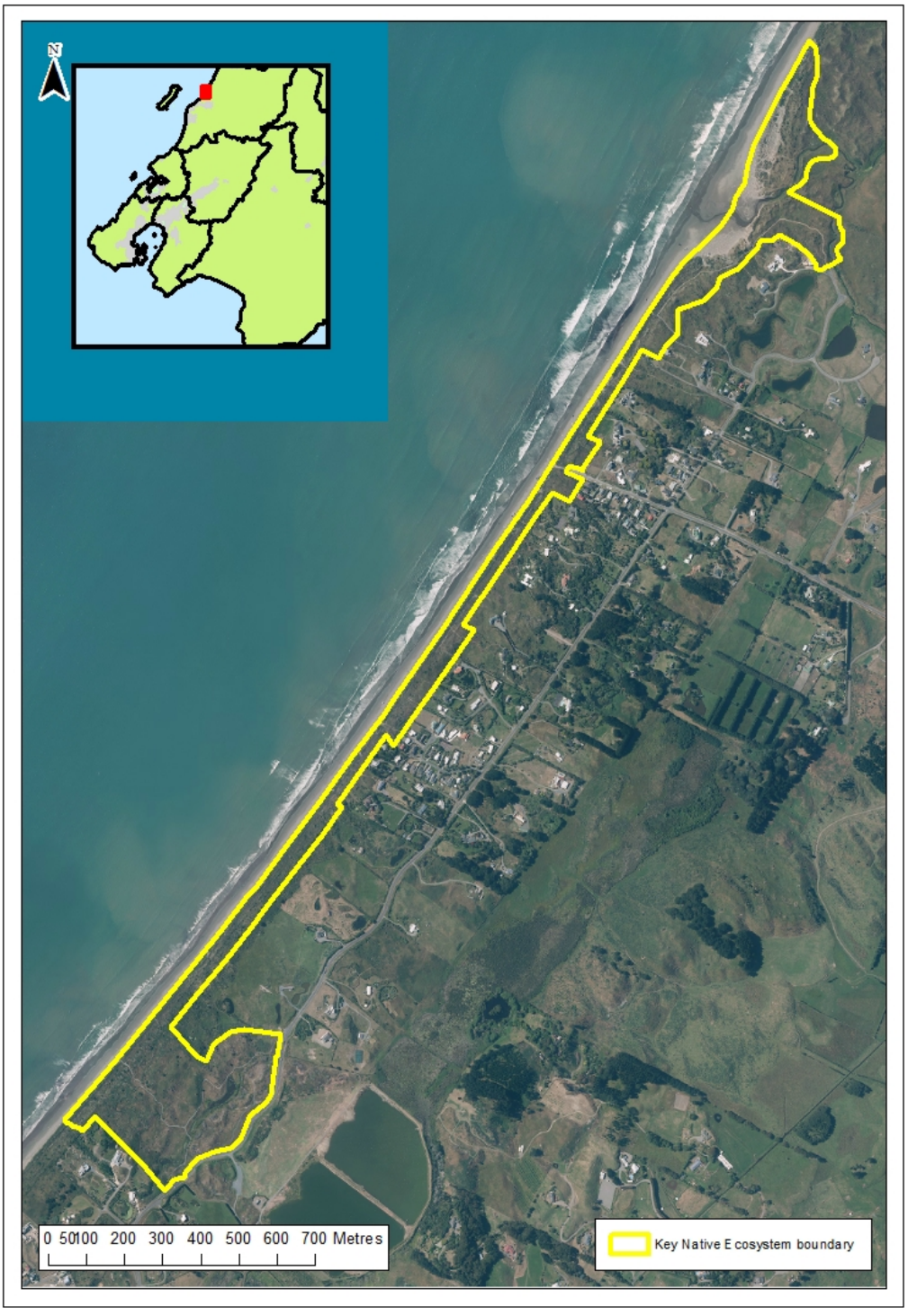
Table 5: KCDC allocated budget for the Peka Peka Coast KNE site

Management activity	Timetable & resourcing		
	2018/19	**2019/20**	**2020/21**
Ecological weed control	$5,000	$5,000	$5,000
Revegetation	$4,750*^	$4,250*^	$4,250*^
Pest animal control	$200*	$200*	$200*
Total	**$9,950*^**	**$9,450*^**	**$9,450*^**

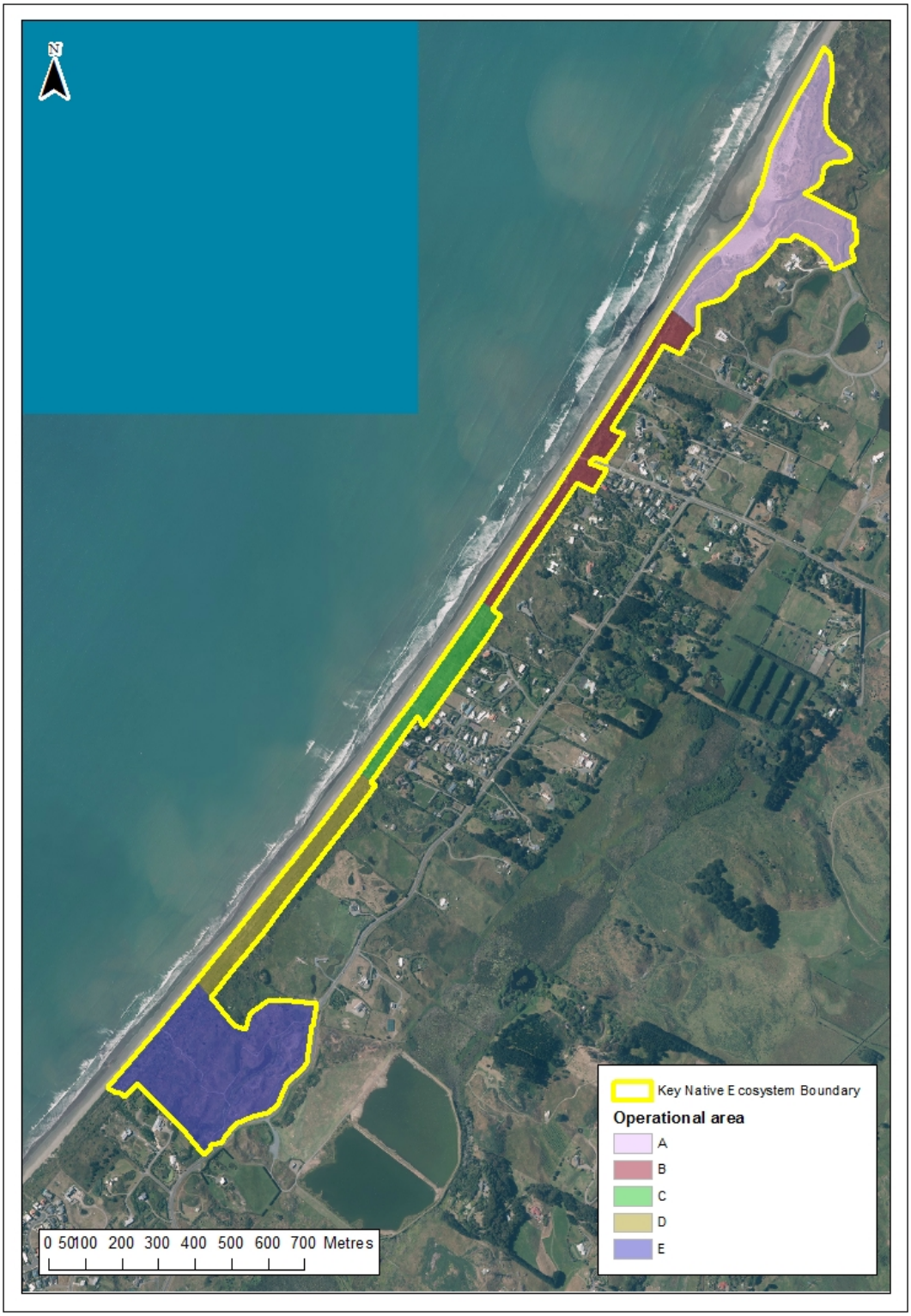
* Subject to funding from the KCDC Coastal Restoration Fund

^Subject to funding from the KCDC Pharazyn Reserve Management Fund

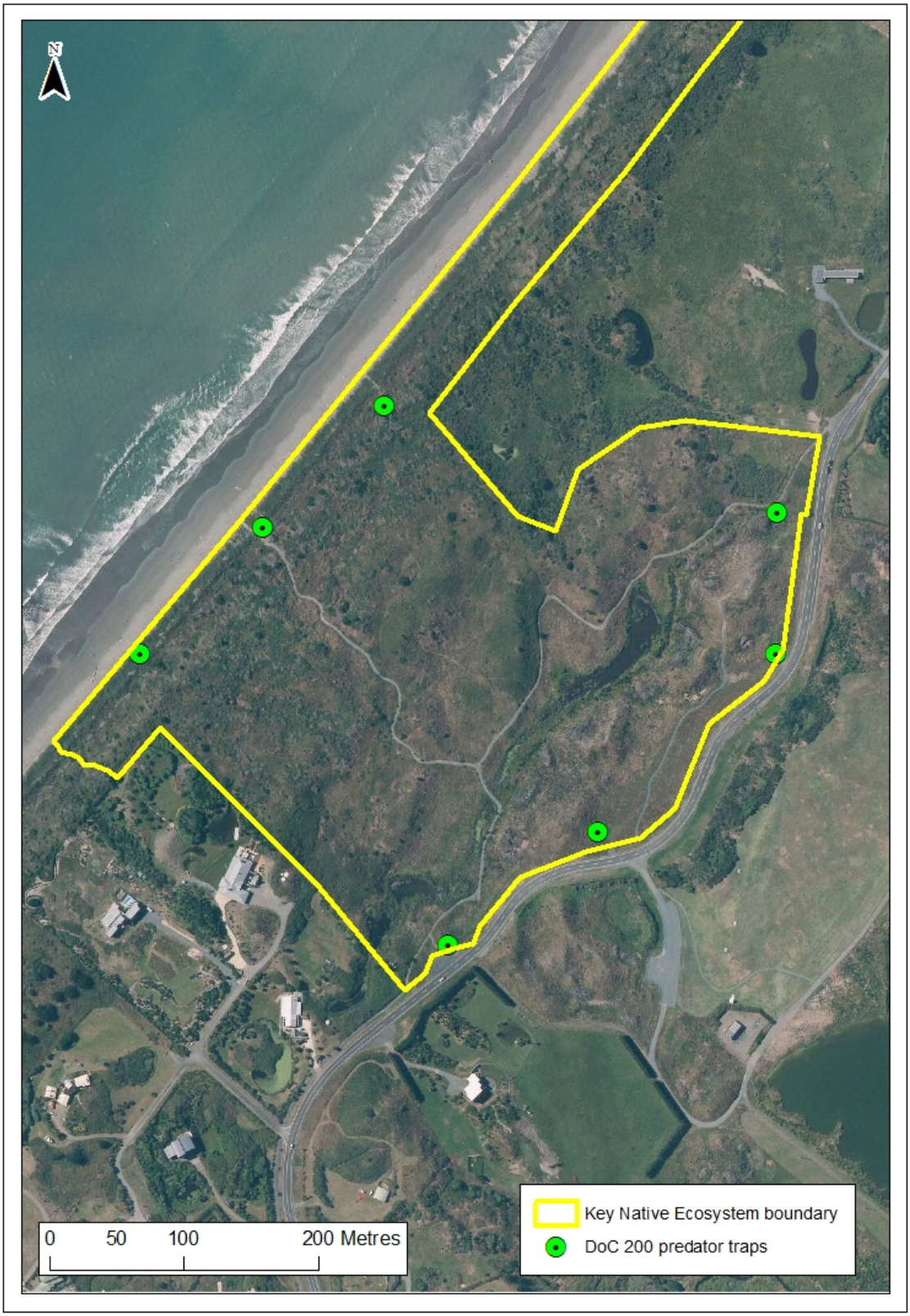
Appendix 1: Site maps



Map 1: Peka Peka Coast KNE site boundary



Map 2: Operational areas in the Peka Peka Coast KNE site



Map 3: Current pest animal control in Pharazyn Reserve (Operational Area E) of the Peka Peka Coast KNE site

Appendix 2: Threatened species list

The New Zealand Threat Classification System lists extant species according to their threat of extinction. The status of each species group (plants, reptiles, etc) is assessed over a five-year cycle. 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 6: Threatened and At Risk species recorded in the Peka Peka Coast KNE site

Scientific name	Common name	Threat status	Source
Plants (vascular)[43]			
Euphorbia glauca (planted)	Shore spurge	At Risk-Declining	http://www.gw.govt.nz/peka-peka-restoration-group/
Ficinia spiralis (natural and planted)	Pīngao	At Risk-Declining	Mike Urlich, Greater Wellington, pers. obs 2014
Kunzea amathicola	Rawiritoa	At Risk-Declining	Mike Urlich, Greater Wellington, pers. obs 2015
Birds[44]			
Haematopus finschi	South Island oystercatcher	At Risk-Declining	http://ebird.org/content/newzealand/ (accessed 22/01/2014)
Haematopus unicolor	Variable oystercatcher	At Risk-Recovering	Todd et al. undated
Himantopus himantopus leucocephalus	Pied stilt	Not Threatened	Todd et al. undated
Hydroprogne caspia	Caspian tern	Threatened-Nationally Vulnerable	http://ebird.org/content/newzealand/ (accessed 22/01/2014)
Larus novaehollandiae scopulinus	Red-billed gull	At Risk - Declining	Todd et al. undated[45]
Sterna striata striata	White-fronted tern	At Risk-Declining	http://ebird.org/content/newzealand/ (accessed 22/01/2014)
Freshwater fish[46]			
Anguilla dieffenbachii	Long fin eel	At Risk-Declining	Boffa Miskell 2012[47]
Galaxias maculatus	Inanga	At Risk-Declining	Boffa Miskell 2012

Appendix 3: Regionally threatened plant species list

The following table lists regionally threatened plant species that have been recorded in the Peka Peka Coast KNE site. The regional threat status of plant species is listed in the Plant Conservation Strategy for Wellington Conservancy 2004-2010[48].

Table 7: Regionally threatened plant species recorded in the Peka Peka Coast KNE site

Scientific name	Common name	Threat status	Source
Ficinia spiralis	Pīngao	Gradual decline	Robyn Smith, Greater Wellington, pers comm 2015
Pimelia aff. *arenaria* AK 21633	Sand daphne	Regionally vulnerable	Robyn Smith, Greater Wellington, pers comm 2015

Appendix 4: Ecological weed species

Ecological weeds recorded in the Peka Peka Coast KNE site are listed in Table 8.

Table 8: Ecological weed species recorded in the Peka Peka Coast KNE site

Scientific Name	Common Name	Weed tier	Ecological impact*
Ammophila arenaria	Marram	Exotic grass	Severe
Chryanthemoides monilifera	Boneseed	Woody weed	Severe
Glyceria maxima	Reed sweet grass	Marginal aquatic	Severe
Lycium ferocissimum	Boxthorn	Woody weed	Severe
Rhamnus alaternus	Evergreen buckthorn	Woody weed	Severe
Zizania latifolia	Manchurian rice grass	Marginal aquatic	Severe
Carpobrotus edulis	Ice plant	Groundcover	High
Cortaderia selloana	Pampas	Exotic grass	High
Gazania rigens	Gazania	Groundcover	High
Lupinus arboreus	Lupin	Woody weed	High
Paspalum distichum	Mercer grass	Exotic grass	High
Paraserianthes lophantha	Brush wattle	Woody weed	High
Pennisetum clandestinum	Kikuyu grass	Exotic grass	High
Pittosporum crassifolium	Karo	Woody weed	High
Rubus fruticosus agg.	Blackberry	Climber	High
Salix fragilis	Crack willow	Woody weed	High
Ulex europaeus	Gorse	Woody weed	High
Agapanthus praecox subsp. *orientalis*	Agapanthus	Groundcover	Moderate
Banksia integrifolia	Banksia	Woody weed	Moderate
Calystegia sylvatica	Great bindweed	Climber	Moderate
Convolvulus sp.	Convolvulus	Climber	Moderate
Correa alba	White correa	Woody weed	Moderate
Cupressus macrocarpa	Macrocarpa	Woody weed	Moderate
Pinus radiata	Radiata pine	Woody weed	Moderate
Rumex sagittatus	Climbing dock	Climber	Moderate
Schedonorus arundinaceus	Tall fescue	Exotic grass	Moderate
Senecio angulatus	Cape ivy	Climber	Moderate
Cytisus proliferus	Tree lucerne	Woody weed	Low
*Metrosideros excelsa***	Pohutukawa	Woody weed	Low
Pinus silvestris	Scots pine	Woody weed	Low
Sambucus nigra	Elderberry	Woody weed	Low
Senecio elegans	Purple groundsel	Groundcover	Low

*Ecological impact defined by Greater Wellington Biodiversity Advisor
**Non local native species

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