Key Native Ecosystem Plan for Karehana Bay Bush

2018-2021

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Contents

1. Key Native Ecosystem plans

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. Karehana Bay Bush Key Native Ecosystem site

The Karehana Bay Bush KNE site covers 38.5 ha of coastal lowland forest. It is located just north of Plimmerton village, near the entrance to Te Awaroa o Porirua Harbour (Appendix 1, Map 1). Set slightly inland from the coast, it is flanked by the Karehana Bay suburb, the Ngāti Toa settlement of Hongoeka, farmland and a large area of privately-owned indigenous forest.

The KNE site includes Karehana Bay Scenic Reserve, the second largest area of publically-owned forest in Porirua City centre (17.7 ha) and ten blocks of forest that are privately owned. Karehana Scenic Reserve is classified by Porirua City Council (PCC) as SES1 — the highest level of ecological significance and rarity — in the Inventory of Ecological Sites in Porirua City Council district[2]. The reserve has been used by Friends of Mana Island volunteers as a seed source for an extensive re-vegetation project on Mana Island[3].

The KNE site is closely connected to Mana Island and other KNE sites providing opportunities for seed dispersal by native bird species and creating corridors for dispersal of native invertebrates and lizards. The KNE site is 600 m west of the Taupō Swamp Complex KNE site, 2 km north of the Whitireia Coast KNE site, 3 km south of the Raroa-Pukerua Coast KNE site and 6 km from Mana Island.

3. Parties involved

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

Landowners

Karehana Bay Scenic Reserve is public land managed by PCC and is subject to a management plan prepared by PCC that provides for the protection and enhancement of heritage, natural and recreation values[4].

Ten privately-owned blocks of land immediately adjacent to Karehana Scenic Reserve with similar biodiversity values are also included in the Karehana Bay Bush KNE site (Appendix 1, Map 2).

Operational delivery

The primary management partners to this plan within Greater Wellington are the Biodiversity and Biosecurity departments. The Biodiversity department plans and coordinates biodiversity management activities and provides biodiversity advice. The Biosecurity department carries out pest control activities.

PCC is a management partner at the KNE site and contributes funding towards the ecological weed control and pest animal control operations. They are also responsible for a municipal water reservoir, supply lines and storm-water pipes that occur within the KNE site.

4. Ecological values

Ecological values are a way to describe indigenous 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 Karehana Bay Bush KNE site covers a series of valleys and hills behind Karehana Bay. The forest is comprised of coastal kohekohe (*Dysoxylum spectabile*)-tawa (*Beilschmiedia tawa*)-podocarp and semi-mature kānuka (*Kunzea robusta*)-mānuka (*Leptospermum scoparium* var. *scoparium*) with a small raupō (*Typha orientalis*) wetland in one gully. The remnants are connected and buffered by areas of kānuka-mānuka regenerating forest, which includes very large specimens of kānuka. The forest contains some of the headwaters and part of the Karehana Stream. The KNE site lies in the Wellington Ecological district[5] and has a mild, humid coastal climate[6], and has an altitudinal range from 15 to 135 metres above sea level.

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

Threatened environments: The Threatened Environment Classification system[7] is a broad classification system that shows how much indigenous vegetation remains within land environments, how much is legally protected, and how past vegetation loss and legal protection are distributed across New Zealand's landscape. Within the KNE site are the following categories: (see Appendix 1, Map 3).

- 3.2 ha is Acutely Threatened (Environments with less than 10% indigenous cover remaining nationally);
- 14 ha is Chronically Threatened (Environments with 10-20% indigenous cover remaining nationally);
- 18.5 ha is At Risk (20 -30% indigenous vegetation remaining nationally)
- 18.3 ha is Critically Underprotected (more than 30% remaining nationally and less than 10% protected)

Threatened species: Within the KNE site there is one Nationally Vulnerable and one At Risk plant species. Regionally there is one Sparse species and one Endangered species. The KNE site provides habitat for two At Risk bird species. Two At Risk lizard species are known from the site and two At Risk fish species are found in the streams. Nationally Threatened species are listed in Appendix 2 and regionally threatened species in Appendix 3.

The Singers and Rogers (2014)[8] classification of pre-human vegetation indicates the Karehana Bay Bush KNE site was wholly comprised of kohekohe, tawa forest (MF6). Only 15.5% of the original extent of this forest type remains in the Wellington region, which makes it a Threatened ecosystem type regionally[9]. Much of the forest was cleared and the present day tawa-kohekohe forest remnants are mostly in gullies within the KNE site. Some gullies support emergent pukatea (*Laurelia novae-zelandiae*) and podocarps such as kahikatea (*Dacrycarpus dacrydioides*).

More than 150 indigenous[10] plant species are known from the KNE site including the threatened species New Zealand carrot (*Daucus glochidiatus*) and large-leaved milk tree (*Streblus banksii*). Five podocarp species occur in this forest; mataī (*Prumnopitys taxifolia*), miro (*Prumnopitys ferruginea*), tōtara (*Podocarpus totara* var. *totara*), rimu (*Dacrydium cupressinum*) and kahikatea.

The site is important for a range of forest birds including red-crowned parakeet (*Cyanoramphus novaezelandiae*), whitehead (*Mohoua albicilla*), kererū (*Hemiphaga novaeseelandiae*), tūī (*Prosthemadera novaeseelandiae*), bellbird (*Anthornis melanura*), fantail (*Rhipidura fuliginosa placabilis*), grey warbler (*Gerygone igata*), morepork (*Ninox novaeseelandiae*), shining cuckoo (*Chrysococcyx lucidus*) and kingfisher (*Todiramphus sanctus vagans*). A New Zealand falcon (*Falco novaeseelandiae* sensu *stricto*) was reported just outside the KNE site boundary during October 2014[11] and a North Island kākā (*Nestor meridionalis septentrionalis*) was seen during 2012[12]. Both bird species have been seen within the KNE site by local residents in 2018.

There are historic records for spotted skink (*Oligosoma lineoocellatum*), but it is unlikely that they persist at this site. Barking gecko (*Naultinus punctatus*) are thought to occur within the KNE site[13].

Karehana Stream flows from Karehana Scenic Reserve through Karehana Park, in the residential area below the KNE site, to the sea. Macroinvertebrates were sampled at the forest edge boundary on Cluny Road and within Karehana Park in 2014[14], with the macroinvertebrate score indicating poor water quality[15,16]. Fishing in the main channel of the stream and in regenerating forest in the upper catchment located giant kōkopu (G*alaxias argenteus*), banded kōkopu (G*alaxias fasciatus*), common bully (*Gobiomorphus citidianus*), longfin eel (*Anguilla dieffenbachii*) and shortfin eel (*Anguilla australis*) [17].

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 pose the greatest threat to ecological values at the Karehana Bay Bush KNE site. A range of weed species occur that alter vegetation structure and composition, and displace or inhibit regeneration of indigenous species. Many weed species originate from gardens and further invasion by weed species can occur through green waste and rubbish dumping. Parts of the KNE site are dominated by the non-local native tree karaka (*Corynocarpus laevigatus*). Karaka is native only to the northern half of the North Island[18], but was planted as a food source around areas of occupation by Maori[19]. Ecological weed species and their priority for control are listed in Appendix 4.

Introduced mammal species, such as possums (*Trichosurus vulpecula*), mustelids (*Mustela* spp.), hedgehogs (*Erinaceus europaeus*) and rats (*Rattus* spp.) are present throughout the KNE site and prey on indigenous birds, lizards and invertebrates. They can suppress and sometimes even eliminate species from a site. Browsing mammals such as possums and goats (*Capra hircus*) can remove palatable understorey species altering vegetation structure and composition, or preventing indigenous regeneration. In addition to the wild population of pests, domestic cats (*Felis catus*) could also pose a risk to indigenous fauna.

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 1 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 1: Summary of all threats to ecological values present at the Karehana Bay Bush KNE site

The codes alongside each threat correspond to activities listed in the operational delivery schedule (Table 2), 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 4).

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
Ecological weeds		
EW-1	Ground covering, scrambling and climbing weeds have the potential to smother and displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Weed species include climbing asparagus (*Asparagus scandens*), montbretia (*Crocosmia* x *crocosmiiflora*), fairy crassula (*Crassula multicava* subsp. *multicava*), elaeagnus (*Elaeagnus* x *reflexa*), aluminium plant (*Galeobdolon luteum*), ivy (*Hedera helix*), ginger (*Hedychium gardnerianum*), sweet pea shrub (*Polygala myrtifolia*), tradescantia (*Tradescantia fluminensis*), plectranthus (*Plectranthus ciliatus*) and nasturtium (*Tropaeolum majus*) (see full list in Appendix 4)	Entire KNE Site
EW-2	Woody weed species have the potential to displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key weed species include Darwin's barberry (*Berberis darwinii*), buddleia (*Buddleja davidii*), boneseed (*Chrysanthemoides monilifera* subsp. *monilifera*), elaeagnus (*Elaeagnus* x *reflexa*), white correa (*Correa alba*), cotoneaster (*Cotoneaster coriaceus*), karaka, Cape honey flower (*Melianthus major*), pine (*Pinus radiata*), brush wattle (*Paraserianthes lophantha*), cherry (*Prunus* spp.), and brush cherry (*Syzygium australe*) (see full list in Appendix 4)	Entire KNE Site
EW-3	Climbing weeds smother and displace native vegetation often causing canopy collapse, inhibit indigenous regeneration, and alter vegetation structure and composition. Key weed species include: old man's beard (*Clematis vitalba*), cathedral bells (*Cobaea scandens*), convolvulus (*Convolvulus arvensis*), mile-a-minute vine (*Dipogon lignosus*), jasmine (*Jasminum polyanthum*), Japanese honeysuckle (*Lonicera japonica*), banana passionfruit (*Passiflora mixta*), blackberry (*Rubus fruiticosus* agg.), Cape ivy (*Senecio angulatus*) (see full list in Appendix 4)	Entire KNE Site
Pest animals		
PA-1	Possums browse palatable canopy vegetation until it can no longer recover[20,21]. This destroys the forest's structure, diversity and function. Possums may also prey on native birds[22] and invertebrates	Entire KNE site
PA-2*	Feral, stray and domestic cats prey on native birds[23], lizards[24] and invertebrates[25], reducing native fauna breeding success and potentially causing local extinctions[26]	Entire KNE site (especially near urban edge)
PA-3*	Mustelids (stoats[27,28] (*Mustela erminea*), ferrets[29,30] (*M. furo*) and weasels[31,32] (*M. nivalis*)) prey on native birds, lizards and invertebrates, reducing their breeding success and potentially causing local extinctions	Entire KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
PA-4*	Hedgehogs prey on native invertebrates[33], lizards[34] and the eggs[35] and chicks of ground-nesting birds[36]	Entire KNE site
PA-5*	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[37,38]	Entire KNE site
PA-6*	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[39,40]	Entire KNE site
PA-7*	Rabbits (*Oryctolagus cuniculus*) and hares (*Lepus europaeus*) graze on palatable native vegetation and prevent natural regeneration in some environments[41]. In drier times hares especially, will penetrate into wetland forest areas browsing and reducing regenerating native seedlings	Entire KNE site (especially near edge)
Human activities		
HA-1*	Garden waste or garden escapes can spread into the KNE site (see EW-1, EW-3)	KNE site boundary (urban sections)
HA-2*	People accessing the KNE site (for recreation, work, or research purposes) can damage native vegetation, disturb native fauna and introduce ecological weeds seeds. Light wells along tracks are likely ecological weed reinvasion points	Entire KNE site
HA-3*	Fire has the potential to destroy vegetation creating opportunities for weed invasion and edge effects	KNE site boundary (urban sections)

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

6. Objectives

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

Objectives

The following objectives will guide the operational activities at Karehana Bay Bush 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 5. The broad approach to operational activities is described briefly below, and specific actions, with budget figures attached, are set out in the operational plan (Table 2).

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. This is discussed in the broad management approach.

Ecological weed control

Weed control is targeted to maintain dominance and increase regeneration of native plants, and to reduce the density and limit the spread of weeds.

A weed survey was undertaken in 2002[42] that identified priority weed species and their locations within Karehana Bay Scenic Reserve. A further survey was conducted in 2013[43], which also included many of the private properties in the KNE site. This survey showed that the weed control programme carried out in the Reserve since 2009/2010 has been very successful in reducing the abundance of weed species.

Therefore, Greater Wellington's annual weed control will continue to focus on progressively controlling the density and abundance of priority weed species (as identified in Appendix 4) within the KNE site boundary (See Appendix 1: Map 4).

Weed control within the identified 'buffer zone' is not currently undertaken as the greater priority is controlling weeds within the KNE site (See Appendix 1: Map 4).

Pest animal control

The purpose of pest animal control undertaken within the KNE site is to control possums and rats to low densities allowing forest regeneration and reduce predation on native birds.

The pest animal control network was set up in 2000 and includes bait stations targeting possums and rats on a 150 m grid within the KNE site (see Appendix 1, Map 5). Some bait stations are outside of the KNE site to provide a pest animal buffer area. The bait stations are checked and filled with fresh bait by Greater Wellington every three months.

The aim of possum control is to keep numbers below 5% Residual Trap Catch (RTC)[44]. The Regional Possum Predator Control Programme (RPPCP) funded by Greater Wellington began operating in the Porirua area in 2015. This is likely to reduce possums in the wider landscape and reduce the possibility of possums reinvading the KNE site.

8. Operational delivery schedule

The operational delivery schedule shows the actions planned to achieve the stated objectives for Karehana Bay Bush 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. A map of operational areas can be found in Appendix 1 (see Map 4).

Table 2: Three year operational plan for the Karehana Bay Bush KNE site

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable & resourcing		
							2018/19	2019/20	2020/21
1	EW-2,3	Ecological weed control	Whole KNE site & buffer zone	Biosecurity department	Focus efforts on target species within the KNE boundary Annual sweep in buffer zone Record and GPS any new incursions or new weed species	Reduce distribution and density of target species	$3,250	$3,250	$3,250
1	EW-1	Ecological weed control	Whole KNE site and buffer zone for weed control	Biosecurity department	Focus efforts on target species within the KNE boundary. Focus on climbers and ground cover weeds. Record and GPS any new incursions or new weed species	Reduce distribution and density of target species	$2,000	$2,000	$2,000
2	PA-1	Pest animal control	Whole KNE site and buffer zone for animal control	Biosecurity department	Bait stations serviced four times annually	Possums <5% RTC* Rats < 10% TTI**	$6,600	$6,600	$6,600
						Total	**$11,850**	**$11,850**	**$11,850**

*RTC = Residual Trap Catch. The control regime has been created to control possums to this level but monitoring will not be undertaken. Experience in the use of this control method indicates this target will be met.

**TTI = Tracking Tunnel Index. The control regime has been created to control rats to this level but monitoring will not be undertaken. Experience in the use of this control method indicates this target will be met.

9. Funding summary

Greater Wellington budget

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

Table 3: Greater Wellington allocated budget for the Karehana Bay Bush KNE site

Management activity	Timetable & resourcing		
	2018/19	**2019/20**	**2020/21**
Ecological weed control	$3,750	$3,750	$3,750
Pest animal control	$3,300	$3,300	$3,300
Total	**$7,050**	**$7,050**	**$7,050**

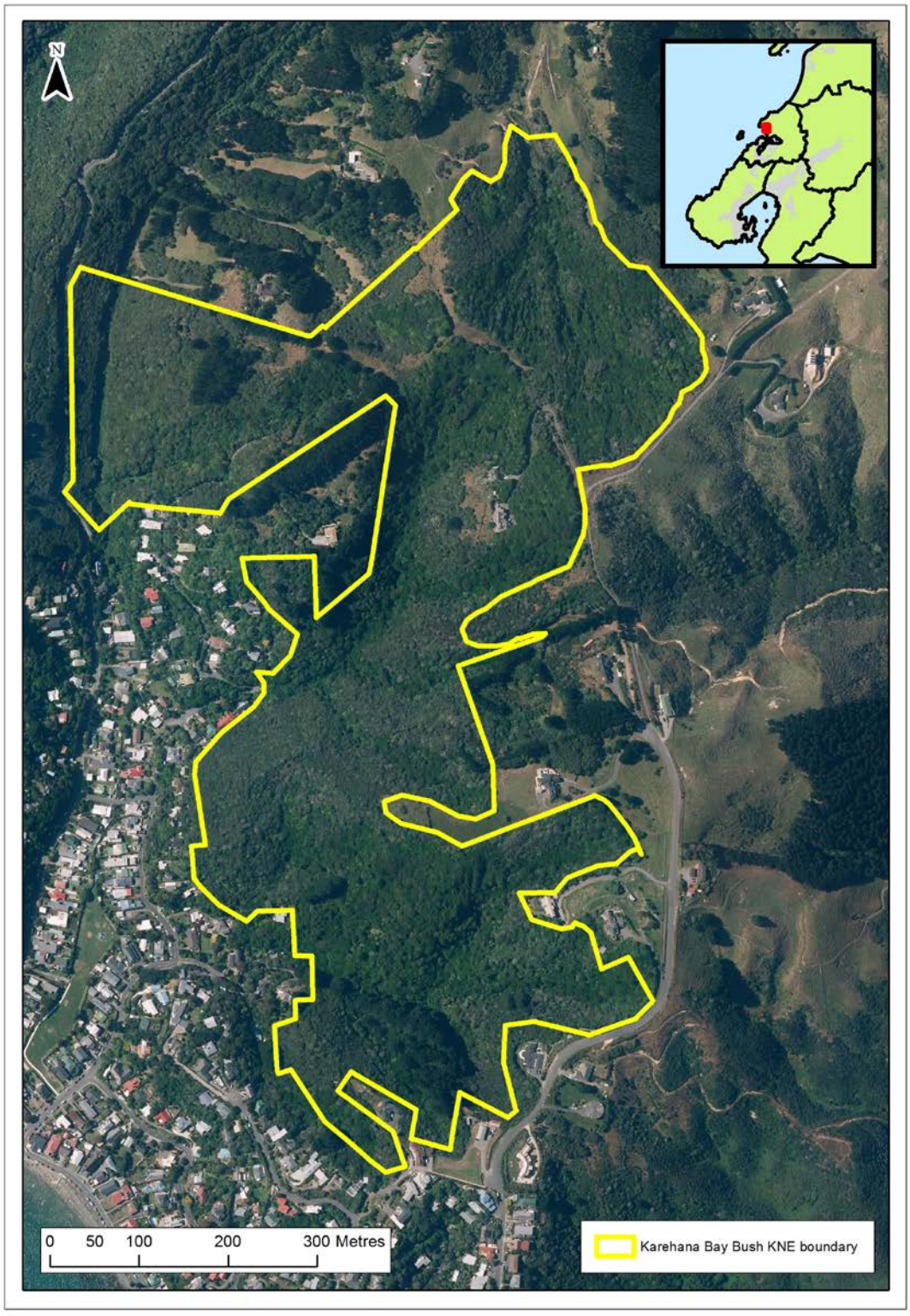
PCC Budget

The budget is subject to confirmation through the PCC long term planning process.

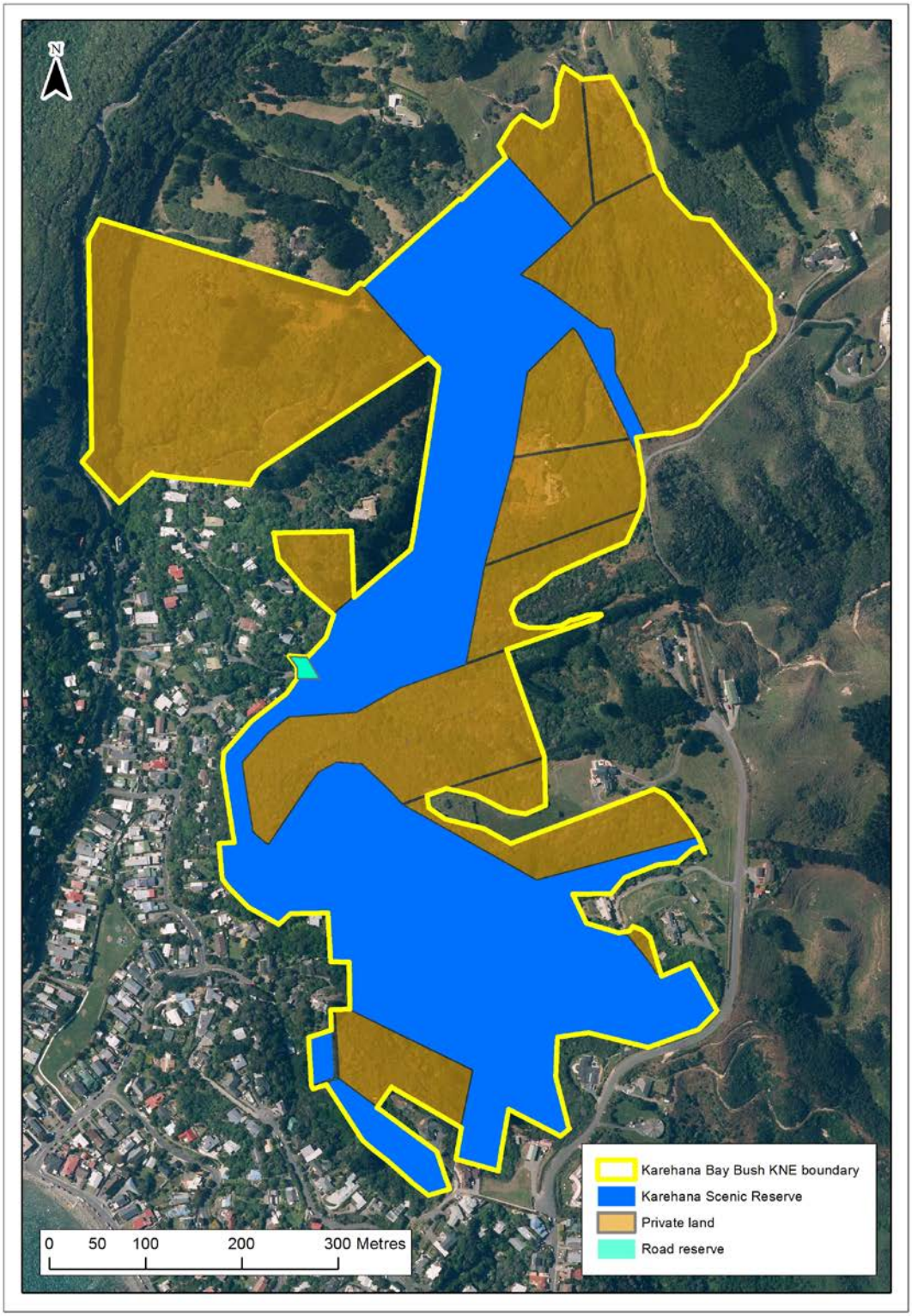
Table 4: PCC allocated budget for the Karehana Bay Bush KNE site

Management activity	Timetable & resourcing		
	2018/19	**2019/20**	**2020/21**
Ecological weed control	$1,500	$1,500	$1,500
Pest animal control	$3,300	$3,300	$3,300
Total	**$4,800**	**$4,800**	**$4,800**

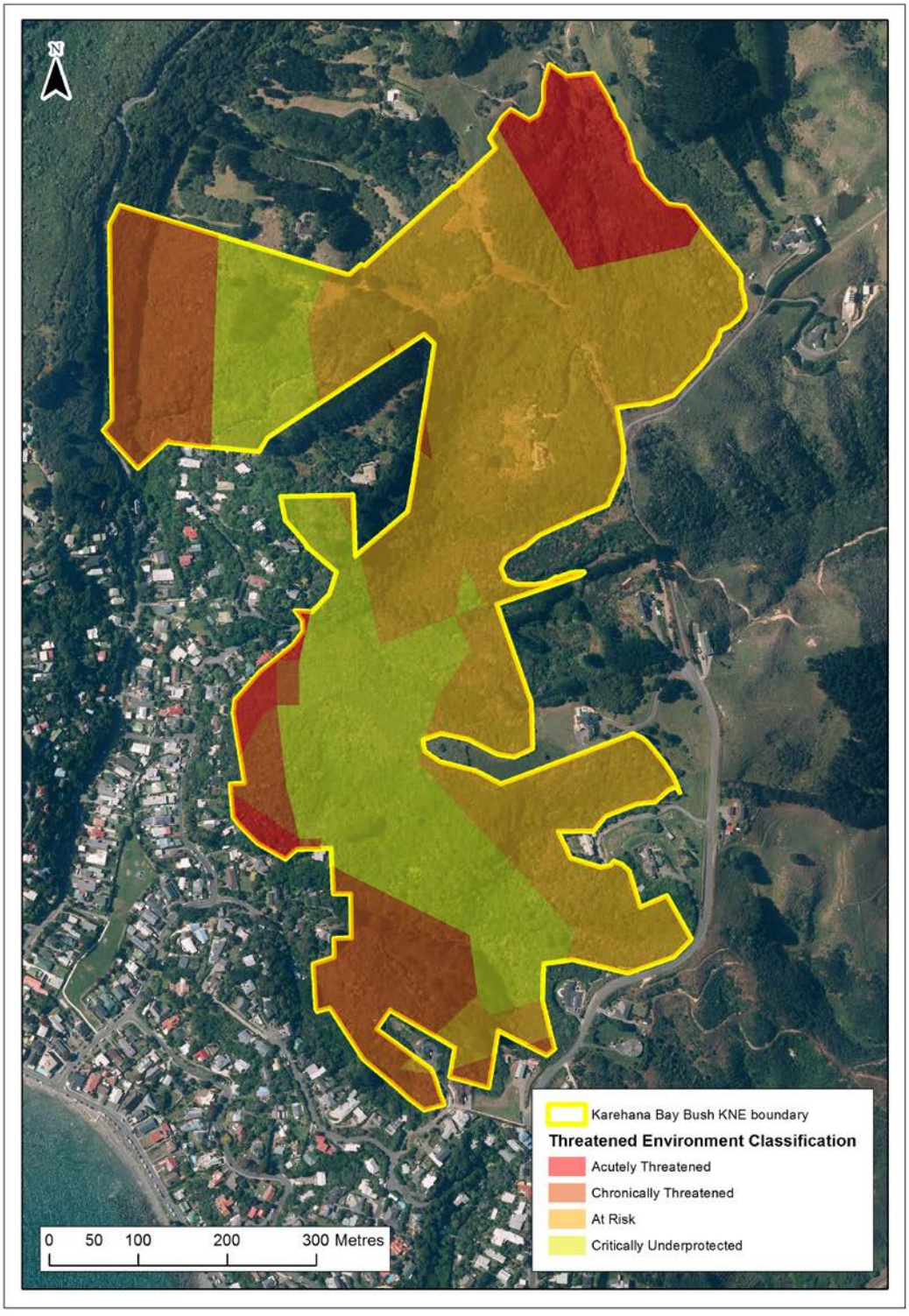
Appendix 1: Site maps



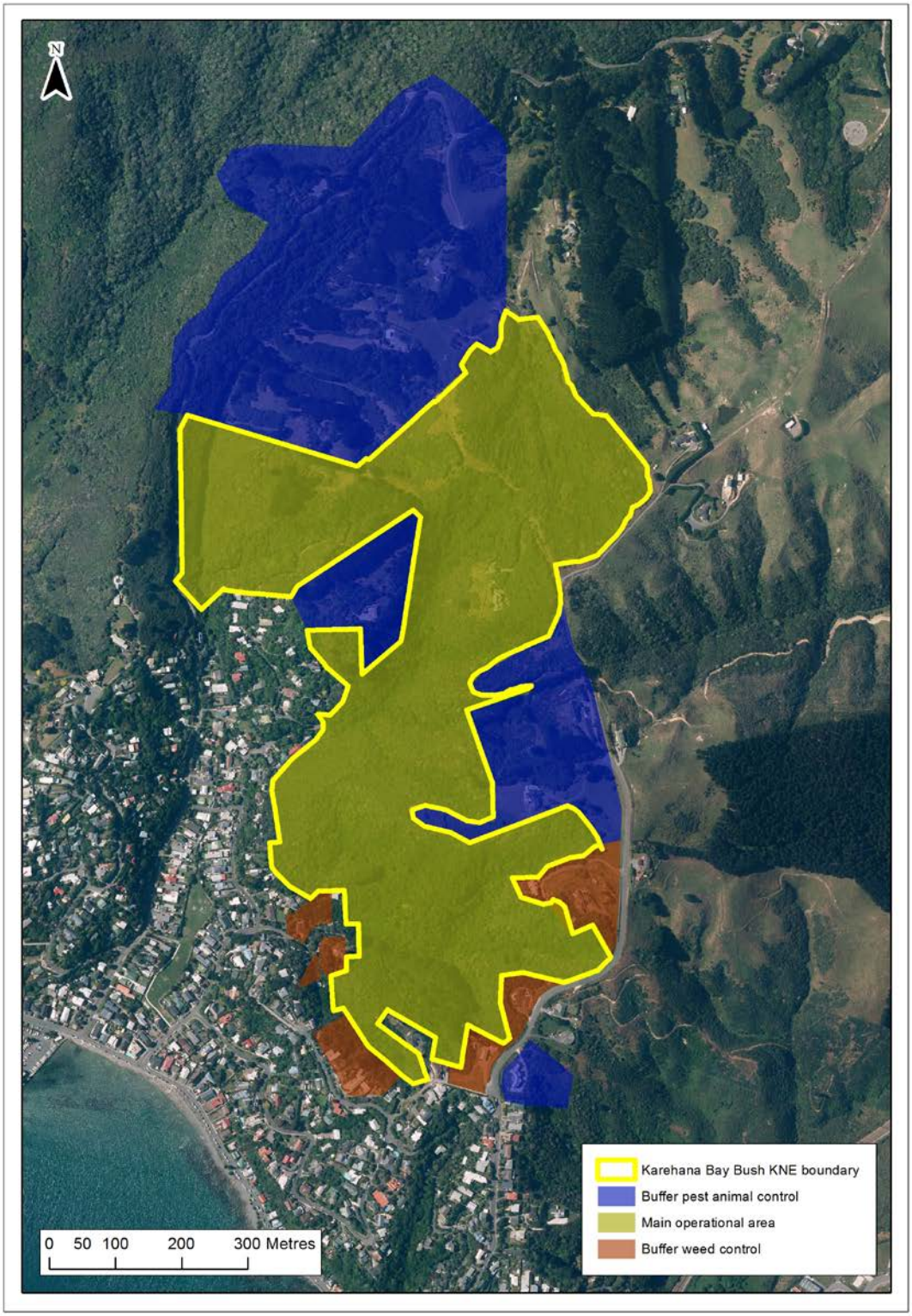
Map 1: The Karehana Bay Bush KNE site boundary



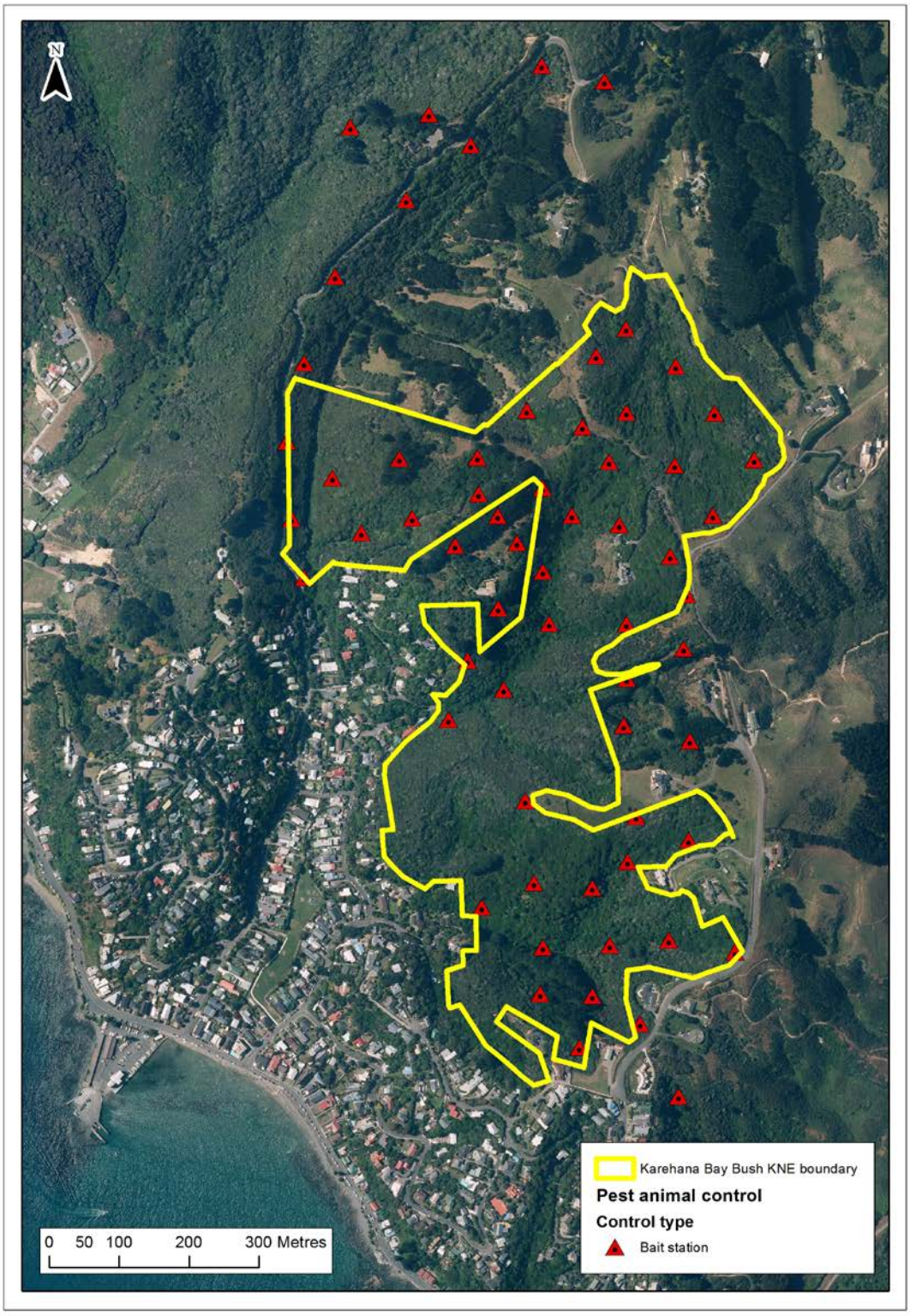
Map 2: The Karehana Bay Bush KNE land ownership



Map 3: Threatened Environment New Zealand classification map for the Karehana Bay Bush KNE site



Map 4: Operational areas in and surrounding the Karehana Bay Bush KNE site



Map 5: Pest animal control in the Karehana Bay Bush KNE site

Appendix 2: Nationally 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[45]. 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 Karehana Bay Bush KNE site.

Table 5: Nationally threatened and At Risk species at the Karehana Bay Bush KNE site

Scientific name	Common name	Threat status	Observation
Plants(vascular)[46]			
Daucus glochidiatus	Native carrot	Threatened – Nationally Vulnerable	New Zealand Plant Conservation Network database accessed 19 November 2014
Streblus banksii	Large-leaved milk tree, tūrepo	At Risk – Relict	Enright et al. 1999[47]
Birds[48]			
Nestor meridionalis septentrionalis	North Island kākā	At Risk - Recovering	eBird database accessed 13 May 2015
Cyanoramphus novaezelandiae	Red-crowned parakeet, kākāriki	At Risk – Relict	eBird database accessed 22 January 2015
Reptiles[49]			
Oligosoma lineoocellatum	Spotted skink	At Risk – Relict	DOC site inventory 2013
Naultinus punctatus	Barking gecko	At Risk – Declining	Department of Conservation 2014[50]
Freshwater fish[51]			
Anguilla dieffenbachii	Longfin eel	At Risk –Declining	Wildlands 2014[52]
Galaxias argenteus	Giant kōkopu	At Risk –Declining	Wildlands 2014

Appendix 3: Regionally threatened plant species list

The following table lists regionally threatened plant species that have been recorded in the Karehana Bay Bush KNE site. The regional threat status of plant species is listed in the Plant Conservation Strategy for Wellington Conservancy 2004-2010[53].

Table 6: Regionally threatened plant species at the Karehana Bay Bush KNE site

Scientific name	Common name	Threat status	Source
Plants[54]			
Mida salicifolia	Willow leaved maire	Regionally Sparse	Enright et al. 1999[55]
Streblus banksii	Large-leaved milk tree, tūrepo	Regionally Endangered	Sawyer JWD 2004[56]

Appendix 4: Ecological weeds

Ecological weeds within the Karehana Bay Bush KNE site. Plant species are listed in priority order as per the 2013 Karehana Bay Scenic Reserve Pest Plant Survey[57].

Table 7: Ecological weeds within the Karehana Bay Bush KNE site

Scientific Name	Common Name	Priority	Notes
Agapanthus praecox subsp. *orientalis*	Agapanthus	1	Seeds are spread by the wind. Can become locally dominant
Asparagus scandens	Climbing asparagus	1	Seeds are spread by birds and can establish in shade. Can smother the canopy of the forest
Berberis darwinii	Darwin's barberry	1	Seeds are spread by birds and can establish in shade
Chrysanthemoides monilifera	Boneseed	1	Establishes in light gaps. Seeds are spread by wind
Clematis vitalba	Old man's beard	1	Smothers native plant species. Seeds are spread by the wind
Cobaea scandens	Cathedral bells	1	Potential to become a major weed of this forest
Correa alba	White correa	1	Seeds are spread by birds into light gaps
Cotoneaster glaucophyllus	Cotoneaster	1	Seeds are spread by birds and can establish in shade
Crocosmia × *crocosmiiflora*	Montbretia	1	Forms dense clumps excluding native seedlings. Produces small cormels on the flower head and on existing corms and sends out creeping rhizomes to extend the colony
Dipogon lignosus	Mile-a-minute	1	Vigorous climber capable of smothering forest edges
Elaeagnus × *reflexa*	Elaeagnus	1	Seeds are spread by birds and invade all types of shrublands
Hedera helix subsp. *helix*	Ivy	1	Vigorous climber of forest edges. Seeds are spread by birds and can establish in shade
Hedychium gardnerianum	Kahili ginger	1	Seeds are spread by birds and can establish in shade
Jasminum polyanthum	Jasmine	1	Vigorous climber smothers native plant species
Lamium galeobdolon	Aluminium plant	1	Ground cover excludes native seedling regeneration
Lonicera japonica	Japanese honeysuckle	1	Vigorous climber smothers native plant species. Berries are spread by birds
Passiflora mixta	Banana passionfruit	1	Vigorous climber smothers native plant species. Berries are spread by birds

Scientific Name	Common Name	Priority	Notes
Syzygium australe	Brush cherry	1	Smothers low growing native plants. Berries are spread by birds
Tradescantia fluminensis	Tradescantia	1	Dense ground cover can prevent indigenous regeneration
Corynocarpus laevigatus	Karaka	2	Dominates Wellington forests and prevents local natives from growing under them
Crassula multicava subsp. *multicava*	Fairy crassula	2	Forms dense cover preventing native seedling germination
Hedychium flavescens	Yellow ginger	2	Seeds are spread by birds and can establish in shade
Melianthus major	Cape honey flower	2	Spreads into light gaps
Pinus radiata	Radiata pine	2	Spreads into light gaps
Prunus sp.	Ornamental cherry	2	Seeds are spread by birds
Quercus sp.	Oak	2	Planted along some tracks
Rubus sp. (*R. fruticosus* agg.)	Blackberry	2	Occupies wet areas
Alocasia brisbanensis	Elephants ears	3	Large perennial which occupies wet areas
Buddleja davidii	Buddleia	3	Forms dense impenetrable stands that are hard to eradicate
Convolvulus arvensis	Convolvulus	3	Climbs over and smothers plants. Easily confused with native species
Gunnera tinctoria	Chilean rhubarb	3	Large perennial which occupies wet areas
Paraserianthes lophantha	Brush wattle	3	Establishes on disturbed sites
Plectranthus ciliatus	Plectranthus	3	Groundcover which tolerates shade
Polygala myrtifolia	Sweet pea shrub	3	Establishes on disturbed sites
Senecio angulatus	Cape ivy	3	Establishes on disturbed sites
Tropaeolum majus	Nasturtium	3	Establishes on disturbed sites
Ulex europaeus	Gorse	3	Regional Pest Management Strategy requires boundary control
Zantedeschia aethiopica	Arum lily	3	Large perennial which occupies wet areas

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