

Key Native Ecosystem Plan for Haywards Scenic Reserve

2015-18



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao



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1. Key Native Ecosystem plans

New Zealand's indigenous biodiversity continues to decline nationally, and in the Wellington region. Major reasons for the decline are that native species are preyed on or outcompeted by invasive species and ecosystems and habitats are lost or degraded through human resource use and development. Active management to control threats is required to protect indigenous biodiversity. Regional councils have responsibility to maintain indigenous biodiversity, as well as to protect significant vegetation and habitats of threatened species, under the Resource Management Act 1991 (RMA).

Greater Wellington Regional Council's (GWRC's) vision for biodiversity is:

“The Wellington region contains a full range of naturally occurring habitats and ecosystems that are in a healthy functioning state and supporting indigenous biodiversity”

GWRC's Biodiversity Strategy 2011-21¹ provides a common focus across the council's departments, and guides activities relating to biodiversity. One of its goals is: High value biodiversity areas are protected.

In order to achieve this vision and goal, the Key Native Ecosystem (KNE) programme seeks to protect some of the best examples of ecosystem types in the Wellington region by managing, reducing, or removing threats to their values. Sites with the highest biodiversity values have been identified and then prioritised for management. Active management of KNE sites can involve control of ecological weeds and pest animals, fencing to exclude stock, restoration planting and helping landowners to legally protect these areas.

KNE sites are managed in accordance with three-year KNE plans, such as this one, prepared for each area by the GWRC's Biodiversity department in collaboration with the landowners and other stakeholders. These plans outline the ecological values and threats specific to each KNE site, set out objectives for biodiversity management, and prescribe the operational actions and budget required to work towards achieving the objectives.

Much of the work planned in KNE sites will be carried out by GWRC staff or contractors engaged by GWRC. For example, the Biosecurity department carries out ecological weed and pest animal control to achieve the objectives set out in KNE plans.

GWRC also recognizes that working relationships between the management partners are critical for achieving the objectives for the KNE site. Under the KNE programme, GWRC staff also work with landowners and volunteer community groups involved in protection or restoration work within KNE sites.

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

2. Haywards Scenic Reserve Key Native Ecosystem

The Haywards Scenic Reserve KNE site is a 122 hectare lowland beech forest with podocarp remnants. The KNE site is located on the Hutt Valley's Eastern Hills overlooking Lower Hutt City (see Appendix 1, Map 1). The KNE site contains Haywards Eastern Hills Scenic Reserve and adjacent areas of regenerating native lowland beech forest and is bisected by the Te Whiti Firebreak, with the Konini Firebreak forming the KNE site's eastern boundary. The KNE site is located within the Hutt Valley's forested eastern hill ranges providing linkages for wildlife between Upper Hutt and Wainuiomata.

Landowner and stakeholders

GWRC 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 GWRC has sought input from landowners and relevant stakeholders, and will continue to involve them as the plan is implemented.

Landowner

Hutt City Council (HCC) owns and administers all of the land contained within the KNE site boundary. HCC manage the reserve in accordance with the Bush Reserves Management Plan².

Management partners and key stakeholders

HCC and GWRC are the main management partners and have worked collaboratively to manage the KNE site's pest control operations for a number of years.

Within GWRC, the Biodiversity and Biosecurity departments are 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.

HCC undertakes ecological weed control, manages recreational activities such as mountain biking and tramping, and provide the primary contact for community groups.

The Friends of Waiwhetu Haywards Scenic Reserve are an active community group who help maintain the scenic reserve's track network and have previously undertaken pest control within it.

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 KNE site is a lowland beech forest that also contains a wide variety of podocarp and broadleaved species. In addition, the KNE site contains the only pukatea (*Laurelia novae-zelandiae*) forest remnant in the Wellington region³ and has a high diversity of plant species supporting populations of native birds, lizards, and land-snails.

The lower slopes of the KNE site are located within the Wellington Ecological District, with the upper slopes within the Tararua Ecological District⁴. Both ecological districts are characterised by steep, strongly faulted hill ranges and have windy, wet and mild climates⁵.

Of note in recognising the ecological values of the Haywards Scenic Reserve KNE site are the following:

Threatened environments: The Threatened Environment Classification⁶ indicates that the KNE site predominately consists of habitat that is either At Risk (lower slopes) or Well Protected (upper slopes), see Appendix 1, Map 2. The lower slopes of the KNE site are representative of habitat that has been much reduced and fragmented with only 20-30% of indigenous habitat in this type of environment remaining nationally.

Threatened species: One Threatened bird species and one At Risk lizard species have been recorded within the KNE Site (see Appendix 2). One plant species is considered regionally uncommon (see Appendix 3).

The Singers and Rogers (2014)⁷ classification of pre-human vegetation indicates the KNE site was once characterised by hard beech forest (MF20), and a small area of kahikatea, pukatea forest (WF8). There is considered to be 51% and 1% respectively of these forest types remaining in the Wellington region compared to their original extent⁸.

Within the KNE site, more than 100 plant species have been recorded, including 40 species of trees and shrubs, 20 species of fern, 8 climbers and 6 orchid species⁹. The KNE site contains a sizable area of podocarp-broadleaf forest consistent with the original MF20 and WF8 forest types between the Dry Creek Zig-Zag track and Te Whiti Firebreak¹⁰ where large rimu (*Dacrydium cupressinum*), miro (*Prumnopitys ferruginea*), hard beech (*Fuscospora truncata*) and pukatea emerge above a canopy of tawa (*Beilschmiedia tawa*), hīnau (*Elaeocarpus dentatus*) and māhoe (*Melicytus ramiflorus*). This area is considered to have the highest ecological value within the KNE site given its mature status and species present. Other flora of note in this area includes rengarenga lily (*Arthropodium cirratum*), kōtukutuku (*Fuchsia excorticata*) and tōtara (*Podocarpus totara*).

The remainder of the KNE site is largely comprised of regenerating lowland forest containing hard beech (*Fuscospora truncata*), black beech (*Fuscospora solandri*), and maire taïke (*Mida salicifolia*) as canopy trees. Other species present include red matipo (*Myrsine australis*), tarata/lemonwood (*Pittosporum eugenoides*), mataī (*Prumnopitys taxifolia*), lancewood (*Pseudopanax crassifolius*), ngaio (*Myoporum laetum*), heketara (*Oleria rani*), kōhūhū, (*Pittosporum tenuifolium*) and kahikatea (*Dacrydium dacrydioides*). The drier slopes and ridgelines consist of kāmahi (*Weinmannia racemosa*), hīnau, rewarewa (*Knightia excelsa*), northern rātā (*Metrosideros robusta*), mānuka (*Leptospermum scoparium*) and kānuka (*Kunzea robusta*).

The reserve contains a well-developed understory of broadleaf species which includes five finger (*Pseudopanax arboreus*), rangiora (*Brachyglottis repanda*), hangehange (*Geniostoma ligustrifolium* var. *ligustrifolium*), karamū (*Coprosma lucida*) and mamaku (*Cyathea medullaris*). Hook grass (*Uncinia* sp.), fern species, supplejack (*Ripogonum scandens*) and kiekie (*Freycinetia banksii*) are all present in the forest understorey. Nīkau palm (*Rhopalostylis sapida*) are common in the gullies¹¹.

The upper slopes have been subject to fire damage and as a result are characterised by regenerating native scrub vegetation such as mānuka, flax (*Phormium cookianum*), broadleaf (*Griselinia littoralis*), five finger, hangehange and mamaku growing through dense gorse (*Ulex europaeus*).

The New Zealand falcon (kārearea; *Falco novaeseelandiae*) is thought to be breeding locally, with regular reports of pairs sighted within the KNE site provided by local residents¹². Bellbird (*Anthornis melanura*), whitehead (*Mohoua albicilla*) and other common indigenous forest birds such as fantail (*Rhipidura fuliginosa*), tūī (*Prothemadera novaeseelandiae*), silvereye (*Zosterops lateralis*), kererū (*Hemiphaga novaeseelandiae*), grey warbler (*Gerygone igata*), and morepork (*Ninox novaeseelandiae*) are present within the KNE site¹³.

The KNE site supports reptile species including the barking gecko (*Naultinus punctatus*) and ngahere gecko (*Mokopirirakau* “southern North Island”)¹⁴ and has a high diversity of native land snails. Fifty-seven species of land snail have been recorded in the Haywards Scenic Reserve KNE site with micro snails especially numerous.¹⁵

Banded kōkopu (*Galaxias fasciatus*), longfin eel (*Anguilla dieffenbachii*), shortfin eel (*Anguilla australis*), inanga (*Galaxias maculatus*) and giant kōkopu (*Galaxias argenteus*) are known to be present in the Waiwhetu Stream¹⁶ downstream of the site and may occur in the tributaries contained within the KNE site.

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.

The primary threats to the ecological values of the KNE site are from ecological weeds, pest animals and wild fire.

Ecological weeds are widespread throughout the KNE site and range from mature pine trees (*Pinus* spp.) to ground-covering plant species. The largest infestations present within the KNE are from climbing asparagus (*Asparagus scandens*). However, the KNE site has a large suburban fringe and high visitor usage resulting in the reinvasion of significant numbers of weed species.

The priority pest animal threats within the KNE site are possums (*Trichosurus vulpecula*), rats (*Rattus* spp.) and mustelids (*Mustela* spp.) as these species are known to have the greatest impact on native forest regeneration, food resource availability and can prey on native birds and lizards. Additional pest animal threats include hedgehogs (*Erinaceus europeaeus*) and feral and domestic cats (*Felis catus*) that are likely to predate on native birds and their eggs within the KNE site. Pest animals are

likely to reinvade from outside the KNE site and are likely to be an enduring threat to the biodiversity values within the KNE site.

Wildfires have historically affected the integrity of the KNE site since the arrival of the first European settlers to the Wellington region¹⁷. While firebreaks are in place, there is still a risk of fire causing damage to the KNE site given the presence of gorse in the landscape which is highly flammable.

The KNE site is an area of high recreational usage with an extensive network of multi-use tracks regularly used for tramping, dog walking, mountain biking and horse riding. Effective planning and management of these tracks is required to ensure that they do not impact on the biodiversity values of the KNE site.

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 management activities.

Table 1: Threats to the ecological values of Haywards Scenic Reserve KNE site.

The codes alongside each threat correspond to activities listed in the operational plan (Table 2), and are used to ensure that actions taken are targeted to specific threats.

Threat code	Threat and impact on biodiversity in the KNE site	Location
Ecological weeds		
EW-1	Ground covering or scrambling ecological weeds smother and displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key weed species include tradescantia (<i>Tradescantia fluminensis</i>), and African club moss (<i>Selaginella kraussiana</i>) (see Appendix 4).	Entire KNE site
EW-2	Woody ecological weed species displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key weed species include boneseed (<i>Chrysanthemoides monilifera</i>), prickly moses (<i>Acacia ulicifolia</i>), hawthorn (<i>Crataegus monogyna</i>), wattle species (<i>Fabaceae</i> spp.), radiata pine (<i>Pinus radiata</i>), and blackberry (<i>Rubus fruticosus</i> agg.) (see Appendix 4).	Entire KNE site
EW-3	Climbing weeds can smother and displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key weed species include climbing asparagus, Japanese honeysuckle (<i>Lonicera japonica</i>), old man's beard (<i>Clematis vitalba</i>), banana passionfruit (<i>Passiflora tripartita</i> var. <i>mollissima</i>), German ivy (<i>Delairea odorata</i>), and Himalayan honeysuckle (<i>Leycesteria formosa</i>) (see Appendix 4).	Entire KNE site
EW-4*	Ecological weeds are likely to reinvade from outside the KNE site. They can be carried by wind, birds, other animals, machinery, bikes, horses and people (including those carrying out management operations).	Entire KNE site, esp. boundaries, track margins

Threat code	Threat and impact on biodiversity in the KNE site	Location
EW-5*	Non-local native tree species are present and can displace locally-native vegetation. Key species for control include karaka (<i>Corynocarpus laevigatus</i>), lacebark (<i>Hoheria populnea</i>) and pūriri (<i>Vitex lucens</i>).	Entire KNE site
Pest animals		
PA-1	Possums and rats browse indigenous vegetation, fruits and seeds, and prey on indigenous fauna.	Entire KNE site
PA-2	Mustelids prey on native birds, lizards and invertebrates, reducing breeding success and potentially causing local extinctions.	Entire KNE site
PA-3*	Pigs (<i>Sus scrofa</i>) disturb the ground through rooting and consume native vegetation and fauna.	Entire KNE site
PA-4*	Mice (<i>Mus musculus</i>) browse native fruit, seeds and vegetation. They compete with native fauna for food and can impede native forest regeneration.	Entire KNE site
PA-5*	Hedgehogs prey on native invertebrates, lizards ¹⁸ and the eggs ¹⁹ and chicks of ground-nesting birds.	Entire KNE site
PA-6*	Feral and domestic cats prey on native birds, lizards and invertebrates, reducing native fauna breeding success and potentially causing local extinctions.	Entire KNE site
PA-7*	Rabbits (<i>Oryctolagus cuniculus</i>) and hares (<i>Lepus europaeus</i>) disturb the ground through burrowing and browse native vegetation.	Entire KNE site
Human activities		
HA-1	Garden waste dumping can lead to pest plant invasions. Common species include tradescantia (<i>Tradescantia fluminensis</i>), plectranthus (<i>Plectranthus ciliatus</i>), agapanthus (<i>Agapanthus praecox</i>), Japanese aralia (<i>Fatsia japonica</i>), lily of the valley tree (<i>Clethra arborea</i>) and montbretia (<i>Crocasmia × crocosmiiflora</i>).	KNE site boundary (urban sections)
HA-2	Recreational use and track creation causes damage and disturbance of the native forest. It is also likely to disturb native fauna and introduce ecological weeds.	Entire KNE site
HA-3*	Structures in the waterways and the water quality of the Waiwhetu Stream may prevent migration of aquatic species. This could result in loss of aquatic species from within the KNE site.	Streams in the KNE site
Other threats		
OT-1*	Fire causes habitat loss and creates conditions suitable for ecological weed invasion.	Entire KNE site

*Threats marked with an asterisk are not addressed by actions in the Operational Plan.

3. Objectives and management activities

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

Objectives

The following objectives will guide the management activities at the Haywards Scenic Reserve KNE site.

1. **To maintain native plant dominance**
2. **To maintain native plant regeneration**
3. **To maintain populations of native birds**
4. **To raise community awareness of the ecological values of the KNE site**

Management activities

Management activities contribute to the objectives above by responding to the threats outlined in Section 2. The broad approach to management activities is described briefly below, and specific actions, with budget figures attached, are set out in the Operational Plan (Table 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.

GWRC's primary focus at the KNE site is ongoing ecological weed control targeting climbing asparagus, and servicing the pest animal control network, that targets possums and rats in Operational Area A (see Appendix 1, Maps 3 and 4).

HCC focuses on broad-scale ecological weed control throughout the site targeting a range of species, especially along urban boundaries and tracks²⁰. HCC are also responsible for managing the recreational use of the reserve and are the primary liaison for the Friends of Waiwhetu Haywards Scenic Reserve, supporting their activities within the KNE.

The management activities undertaken by GWRC, HCC and community groups aim to control pest plants and animals to low levels, enabling regeneration of the native forest cover, and supporting viable populations of native birds, lizards and invertebrates.

Ecological weed control

Ecological weed control will be undertaken throughout the site to maintain native plant dominance and encourage native forest regeneration within the KNE site.

GWRC will focus on controlling climbing asparagus. Climbing asparagus is widespread throughout the KNE site with some areas dominated by heavy infestations that have out-competed the native understory vegetation. GWRC will undertake targeted grid searches to identify and treat climbing asparagus in Operational Area A. This grid search and control operation started in 2015 within the mature core forest area immediately south of Te Whiti firebreak (which is the highest biodiversity value area).

The grid searches will expand out from the core forest during the three-years of this plan sweeping north to south within Operational Area A. This is aimed at initially protecting the highest value biodiversity areas and isolating the heavy infestations for targeted control. Following control work for climbing asparagus, annual monitoring will be undertaken via fixed photopoints by GWRC. These will be established to monitor the success of the control work and to assess the regeneration rate of native vegetation.

HCC undertake ecological weed control throughout the whole KNE with the majority of their pest plant control undertaken on infestations located along the urban-edges of the KNE site, and adjacent to firebreaks and tracks. HCC have identified a number of key weed species that they target specifically for control across the KNE site. These are old man's beard, banana passionfruit, Japanese honeysuckle, and mile-a-minute. A full list of ecological weed species and their priority for control are listed in Appendix 4.

Pine trees within the KNE have previously been controlled through ring-barking and/or poison application. HCC will monitor the progress of the pine control within the KNE site.

Pest animal control

Pest animal control is targeted at controlling possums and rats. This reduces browsing pressure on native vegetation, and predation pressure on native animals. It also helps to facilitate regeneration of the native forest and an increased abundance of food resources for native fauna.

A Pelifeed bait station network was installed in Operational Area A in 2015 (see Appendix 1, Map 4). GWRC service the bait stations with an anticoagulant bait on a three-monthly basis. This control method is known to keep possums and rats to low densities.

The KNE site is contiguous with a large bait station network bordering the site to the south-east. These bait-stations are managed by HCC targeting possums and rats and will help to prevent incursions into the KNE site.

In 2015/16 GWRC will install and service a network of DOC 200 kill-traps within Operational Area A (the highest value biodiversity area of the KNE site) targeting other pest animal predators, such as mustelids and hedgehogs, that have been identified as potential threats to native birds within the KNE. The kill-trap network will be serviced alongside the bait station network every three-months.

Community engagement

GWRC will raise community awareness of the threat to the KNE values posed by the dumping of garden waste and litter. A 2014 survey by GWRC²¹ found several ecological weed species including climbing asparagus, pampas (*Cortaderia selloana*), tradescantia, kahili ginger, selaginella, and Japanese honeysuckle, within properties adjacent to the KNE site. GWRC will send letters to local residents alerting them to the re-colonisation risk posed by their gardens and asking them to be vigilant and report any sightings of garden dumping activities. Information on alternative garden species to plant will be included in the letter.

Track building

A new multi-purpose recreational use track is expected to be developed in Operational Area B by HCC in 2015/16. This track will primarily be used by day-walkers and mountain bikers. HCC are currently working with user groups to ensure that the ecological values within Operational Area B are maintained during and after track construction.

HCC will continue to work with the Friends of Waiwhetu's Haywards Scenic Reserve community group to ensure that ecological values are maintained or enhanced along any existing tracks and that new tracks do not damage areas with high ecological value within Operational Area A.

4. Operational plan

The operational plan shows the actions planned to achieve the stated objectives for Haywards Scenic Reserve KNE site, and their timing and cost over the three-year period from 1 July 2015 to 30 June 2018. The budget for the 2016/17 and 2017/18 years are indicative only and subject to change. A map of Operational Areas can be found in Appendix 1 (see Map 3).

Table 2: Three-year operational plan for Haywards Scenic Reserve KNE site.

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable and resourcing		
							2015/16	2016/17	2017/18
1,2,3	PA - 1	Pest animal control	A	Biosecurity department	Service all bait stations quarterly with anticoagulant bait to control possums and rats	Possums <5% RTC * Rats < 10% TTI**	\$7,500	\$7,500	\$7,500
3	PA-2, 5	Pest animal control	A	Biosecurity department	Install network of DOC 200 kill-traps. Service traps every 3 months once installed.	Mustelids <5% TTI**	\$4,500	\$4,500	\$4,500
1,2,3	EW - 3	Ecological weed control	A	Biosecurity department	Climbing asparagus grid search and control using herbicide	Reduction in the distribution and abundance of ecological weed species	\$12,000	\$12,000	\$12,000
1,2,3	EW – 1,2,3	Ecological weed control	A & B	HCC	Weed sweep targeting a range of species using a broad-spectrum herbicide (see Appendix 4 for species list)	Reduction in the distribution and abundance of ecological weed species	***	***	***
1,2,3	EW - 3	Regeneration monitoring	A	Biodiversity department	Set up and review photo point monitoring locations	Photo points developed in 2015/16 Annual monitoring undertaken	Biod. Officer time	Nil	Nil
1,2,4	EW – 1,2,3	Community engagement	-	Biodiversity department	Contact local community via letter drop regarding ecological weeds within gardens	Letter sent in 2015/16	Nil	Nil	Nil

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable and resourcing		
							2015/16	2016/17	2017/18
						Total	\$24,000	\$24,000	\$24,000

*RTC = Residual Trap Catch. The control regime has been designed 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 regimes have been designed to control rats and mustelids to this level but monitoring will not be undertaken. Experience in the use of these control methods indicates this target will be met.

***Variable costs determined annually by HCC that cannot be detailed at this time.

5. Funding summary

GWRC budget

The budget for the 2016/17 and 2017/18 years are indicative only and subject to change as a result of the 2015-25 Long Term Plan process.

Table 3: GWRC Allocated budget for the Haywards Scenic Reserve KNE site.

Management activity	Timetable and resourcing		
	2015/16	2016/17	2017/18
Ecological weed control	\$6,000	\$6,000	\$6,000
Pest animal control	\$6,000	\$6,000	\$6,000
Total	\$12,000	\$12,000	\$12,000

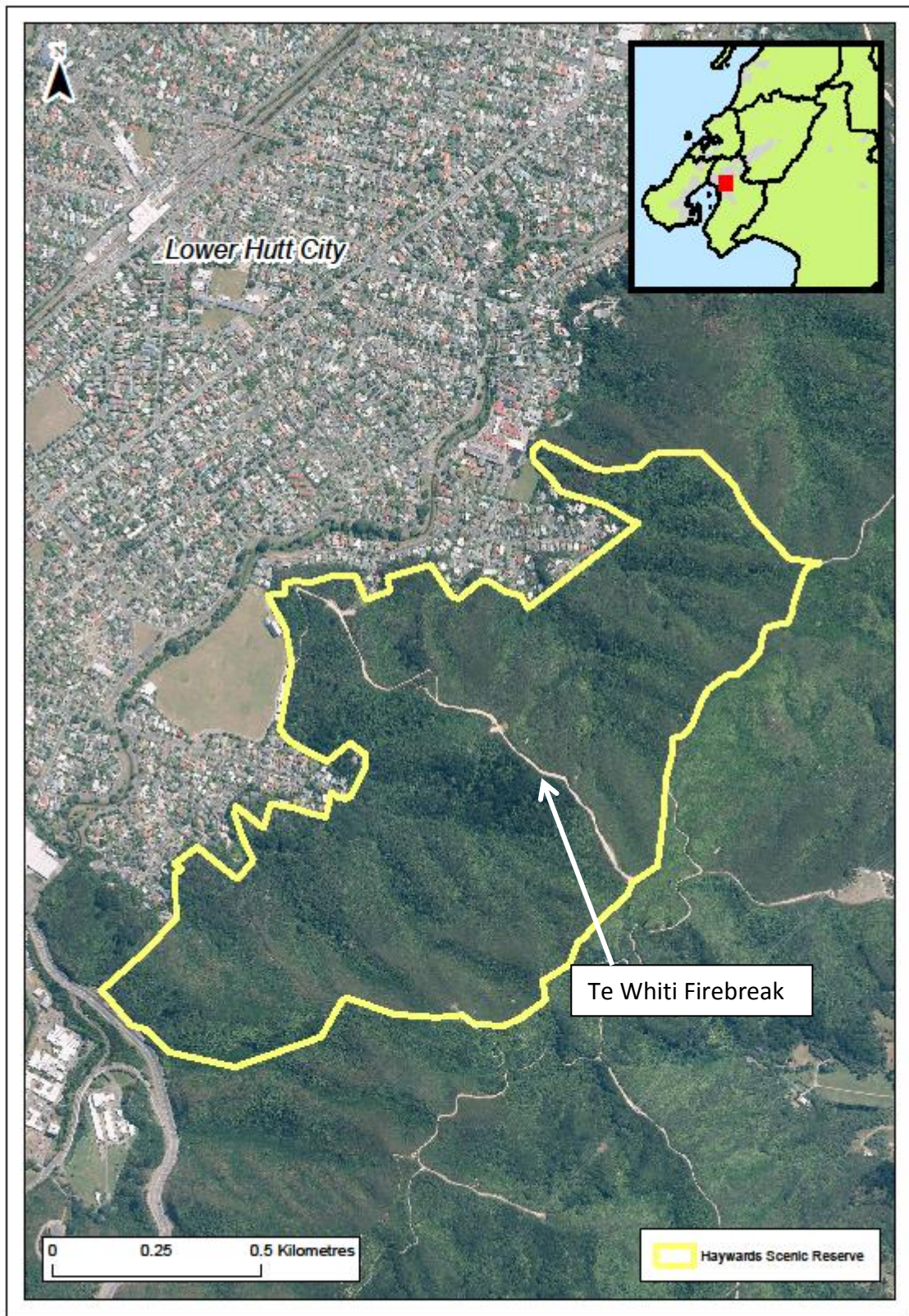
Other contributions

The budget is subject to confirmation through Hutt City Council's long term planning process.

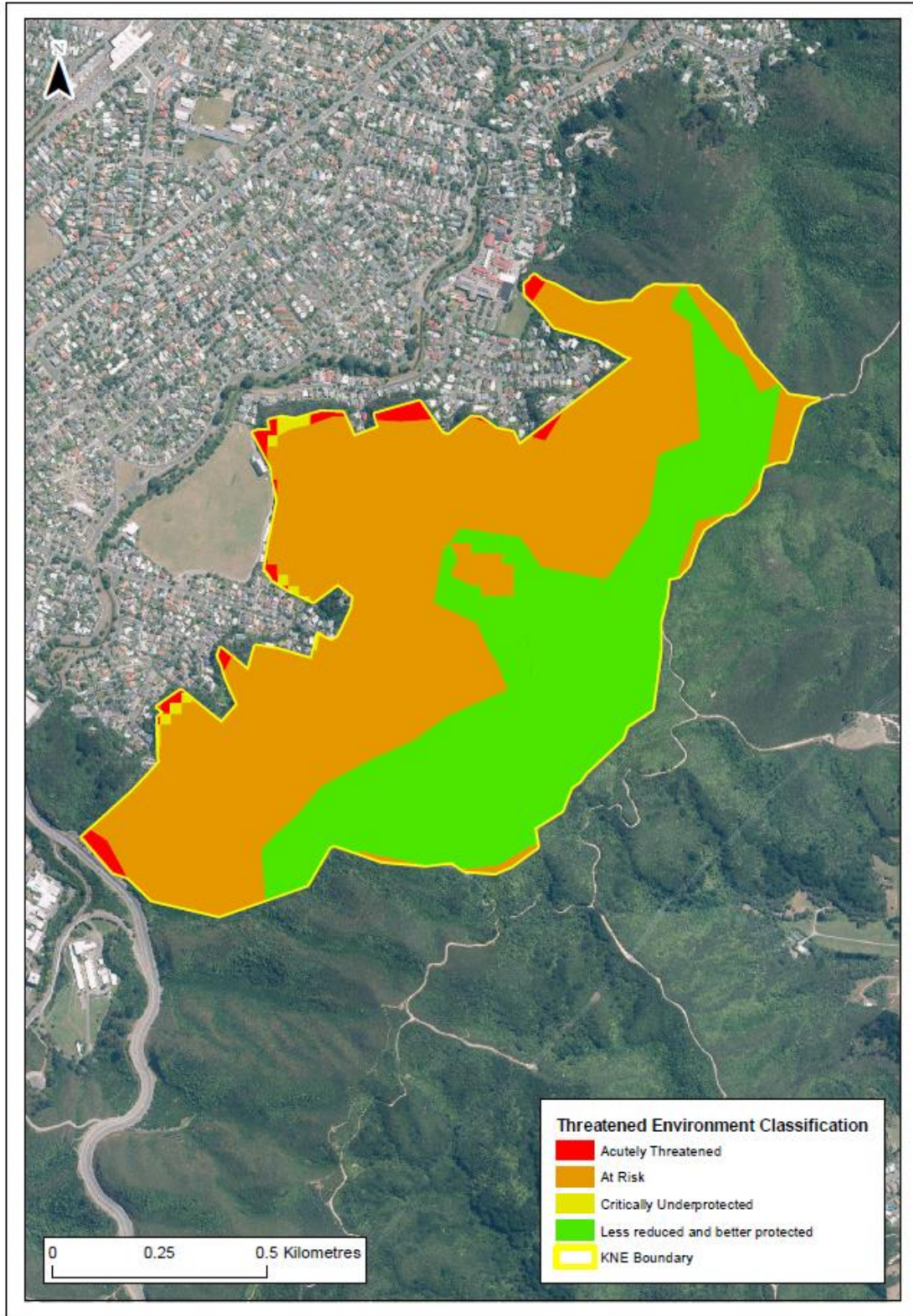
Table 4: Additional allocated budget for the Haywards Scenic Reserve KNE site from HCC.

Management activity	Timetable and resourcing		
	2015/16	2016/17	2017/18
Ecological weed control	\$6,000	\$6,000	\$6,000
Pest animal control	\$6,000	\$6,000	\$6,000
Total	\$12,000	\$12,000	\$12,000

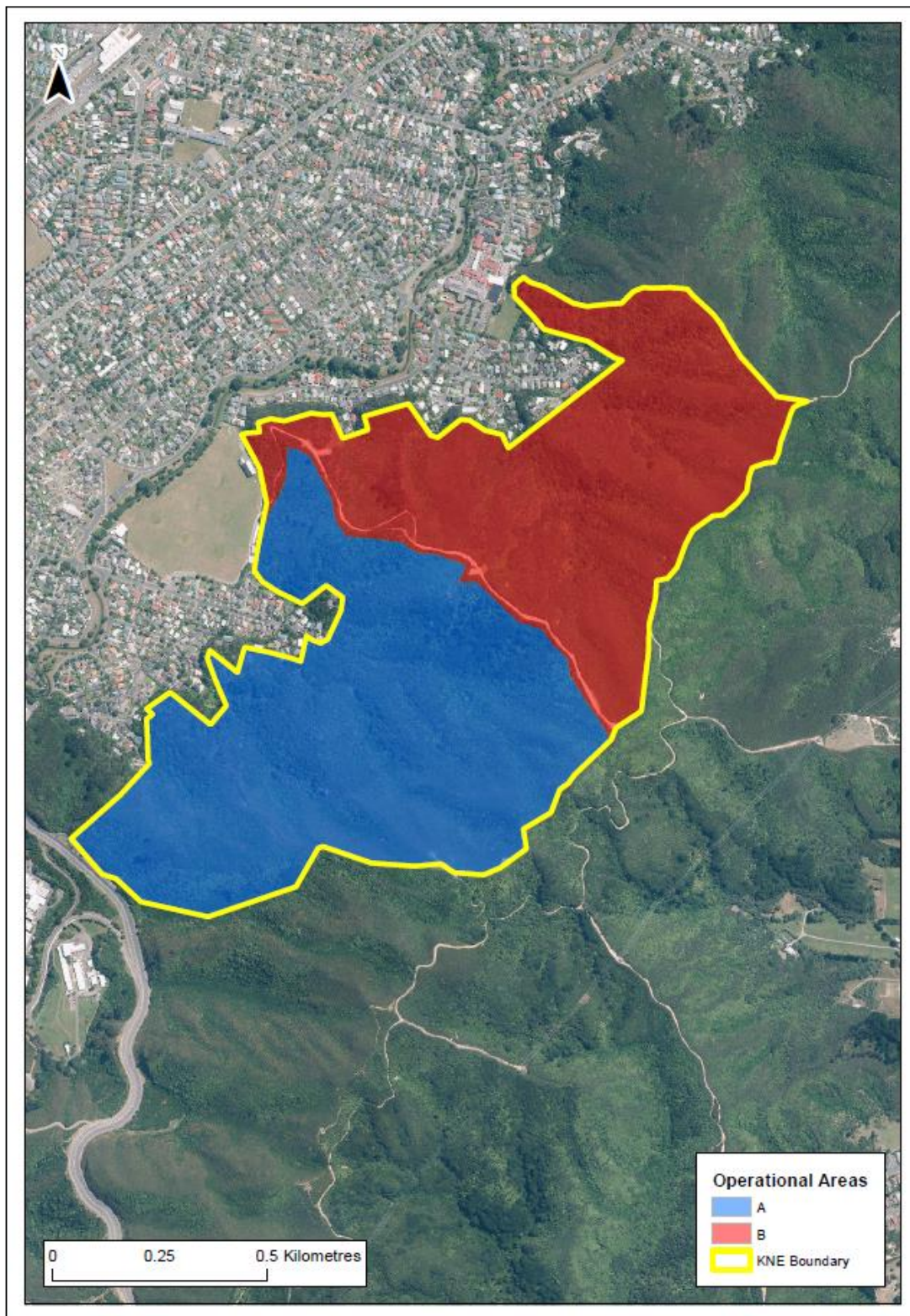
Appendix 1: Site maps



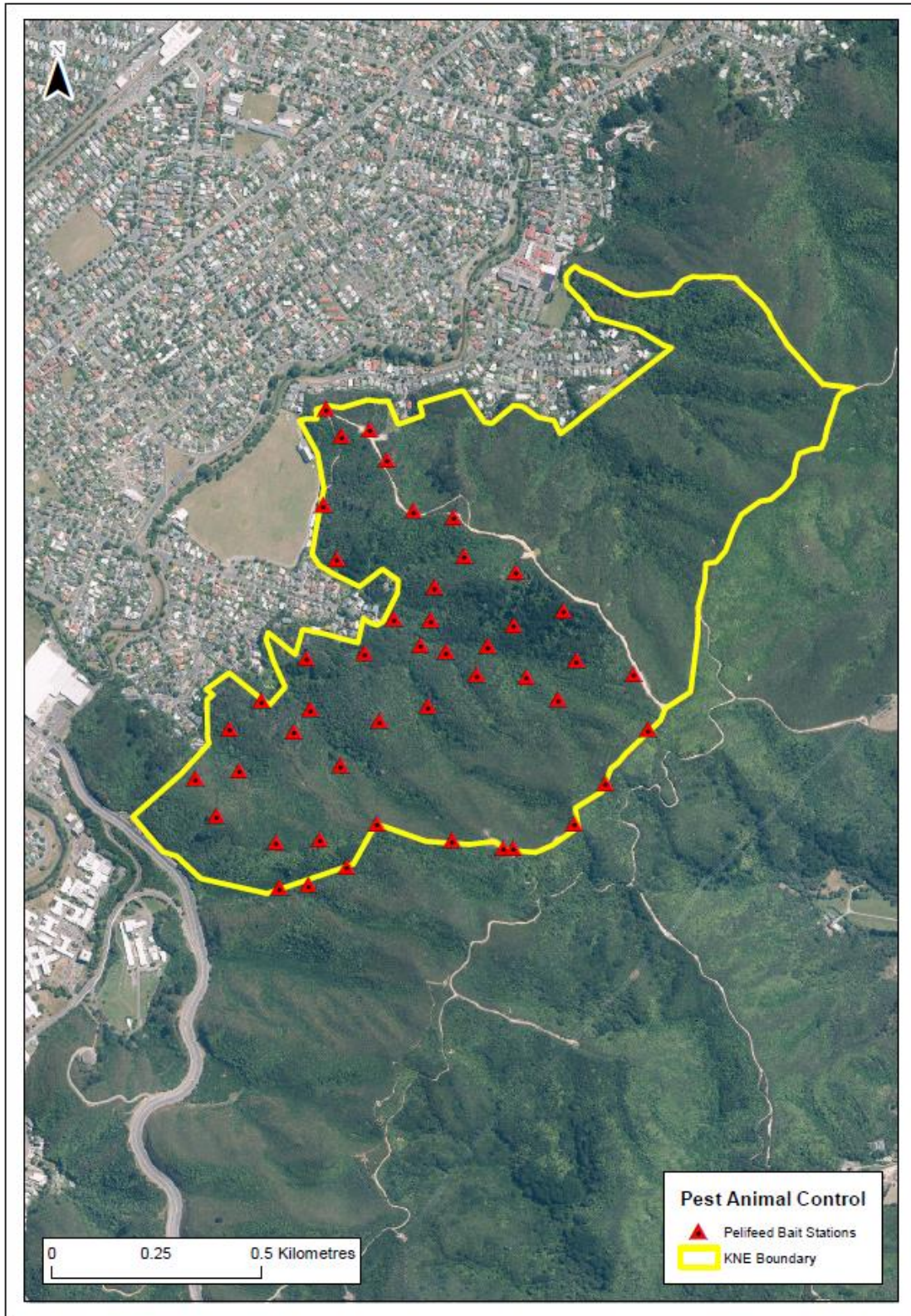
Map 1: Haywards Scenic Reserve KNE site boundary.



Map 2: Land Environments of New Zealand (LENZ) threat classification map for the Haywards Scenic Reserve KNE site (copyright Ministry for the Environment/Landcare Research).



Map 3: Operational Areas in the Haywards Scenic Reserve KNE site.



Map 4: Locations of Pelifeed bait stations within the Haywards Scenic Reserve 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 three-year cycle²² with the exception of birds that are assessed on a five-year cycle²³. 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 Haywards Scenic Reserve KNE site.

Table 5: Threatened and At Risk species at the Haywards Scenic Reserve KNE site.

Scientific name	Common name	Threat status	Observation
Birds²⁴			
<i>Falco novaeseelandiae</i>	New Zealand falcon, kārearea	Threatened Nationally – Vulnerable	Bell 2014 ²⁵
Reptiles²⁶			
<i>Naultinus punctatus</i>	barking gecko	At Risk - Declining	Department of Conservation 2014 ²⁷ .

Appendix 3: Regionally threatened species list

The following table lists the regionally threatened species that has been recorded in the Haywards Scenic Reserve KNE site. This species has been identified in the Plant Conservation Strategy, Wellington Conservancy 2004-2010²⁸.

Table 6: Regionally threatened species recorded in Haywards Scenic Reserve KNE site.

Scientific name	Common name	Threat status	Observation
Plants²⁹			
<i>Arthropodium cirratum</i>	Rengarenga lily	Regionally threatened	Department of Conservation 1999 ³⁰

Appendix 4: Ecological weed species

Ecological weeds recorded and indicated as priority weed species in a recent survey³¹ within Haywards Scenic Reserve KNE site. Plant species are listed in priority order. This list is used by HCC to inform which species to control during their weed sweep.

Table 7: Ecological weed species recorded in Haywards Scenic Reserve KNE site.

Scientific Name	Common name	Priority
<i>Akebia quinata</i>	Chocolate vine, five leaf akebia	1
<i>Asparagus aethiopicus</i>	Bushy asparagus	1
<i>Asparagus scandens</i>	Climbing asparagus	1
<i>Bomarea</i> sp.	Bomarea	1
<i>Clematis vitalba</i>	Old man's beard	1
<i>Delairea odorata</i>	German ivy	1
<i>Dipogon lignosus</i>	Mile-a-minute vine	1
<i>Euonymus japonicus</i>	Japanese spindleberry	1
<i>Hedera helix</i> subsp. <i>helix</i>	Ivy	1
<i>Hedychium gardnerianum</i>	Kahili ginger	1
<i>Jasminum polyanthum</i>	Jasmine	1
<i>Leycesteria formosa</i>	Himalayan honeysuckle	1
<i>Lonicera japonica</i>	Japanese honeysuckle	1
<i>Pandorea pandorana</i>	Wonga wonga vine	1
<i>Passiflora tripartita</i> var. <i>mollissima</i>	Banana passionfruit	1
<i>Tradescantia fluminensis</i>	Tradescantia	1
<i>Acacia ulicifolia</i>	Prickly Moses	2
<i>Acer pseudoplatanus</i>	Sycamore	2
<i>Buddleja davidii</i>	Buddleia	2
<i>Chrysanthemoides monilifera</i>	Boneseed	2
<i>Convolvulus arvensis</i>	Convolvulus	2
<i>Cortaderia selloana</i>	Pampas	2
<i>Cotoneaster glaucophylla</i>	Cotoneaster	2
<i>Crataegus monogyna</i>	Hawthorn	2
<i>Crocoshia xcrocosmiflora</i>	Montbretia	2
<i>Ehrharta erecta</i>	Veldt grass	2
<i>Elaeagnus xreflexa</i>	Elaeagnus	2
<i>Galeobdolon luteum</i>	Aluminium plant (Artillery plant)	2
<i>Ilex aquifolium</i>	Holly	2
<i>Iris foetidissima</i>	Stinking iris	2
<i>Ligustrum lucidum</i>	Tree privet	2
<i>Nephrolepis cordifolia</i>	Tube ladder fern	2
<i>Plectranthus ciliatus</i>	Plectranthus	2
<i>Rubus</i> sp. (<i>R. fruticosus</i> agg.)	Blackberry	2
<i>Sambucus nigra</i>	Elderberry	2
<i>Selaginella kraussiana</i>	African clubmoss, selaginella	2
<i>Syzygium smithii</i>	Lillypilly, monkey apple	2
<i>Tropaeolum majus</i>	Nasturtium	2
<i>Zantedeschia aethiopica</i>	Arum lily	2
<i>Acacia longifolia</i>	Sydney golden wattle	3
<i>Agapanthus praecox</i>	Agapanthus	3
<i>Allium triquetrum</i>	Onion weed	3
<i>Cytisus scoparius</i>	Broom	3

Scientific Name	Common name	Priority
<i>Erica lusitanica</i>	Spanish heath	3
<i>Erigeron karvinskianus</i>	Mexican daisy	3
<i>Genista monspessulana</i>	Montpellier broom	3
<i>Vinca major</i>	Periwinkle	3
<i>Chamaecytisus palmensis</i>	Tree lucerne	4
<i>Corynocarpus laevigatus</i>	Karaka	4
<i>Foeniculum vulgare</i>	Fennel	4
<i>Hoheria populnea</i>	Lacebark	4
<i>Pinus radiata</i>	Radiata pine	4
<i>Ulex europaeus</i>	Gorse	4
<i>Vitex lucens</i>	Puriri	4

References

- ¹ Greater Wellington Regional Council. 2010. Biodiversity Strategy 2011-21.
- ² Hutt City Council. 2008. Bush Reserves Management Plan. Revised 2014.
- ³ Department of Conservation. 1999. Ecological Site Inventory Details – Eastern Hutt Hills Bush. 3 pp.
- ⁴ Department of Conservation. 1987. Ecological Regions and Districts of New Zealand
- ⁵ Department of Conservation. 1987. Ecological Regions and Districts of New Zealand.
- ⁶ Walker S., Cieraad E., Grove P., Lloyd K., Myers S., Park T., and Porteous T. 2007. Guide for users of the threatened environment classification, Version 1.1, August 2007. Landcare Research New Zealand. 34 pp. plus appendix.
- ⁷ Singers N.J.D., and Rogers G.M. 2014. A classification of New Zealand's terrestrial ecosystems. Science for Conservation No. 325. Department of Conservation, Wellington. 87pp.
- ⁸ Crisp P and Singers N 2015. (in prep). Terrestrial ecosystems of the Wellington region.
- ⁹ Park, G N. 1971. An Ecological Survey of Haywards Scenic Reserve
- ¹⁰ Friends of Waiwhetu – Haywards Scenic Reserve. 2015. Tracks in the Hayward Scenic Reserve. <http://www.waiwhetu.org/tracks.htm>
- ¹¹ Park, G N. 1971. An Ecological Survey of Haywards Scenic Reserve
- ¹² Bell D. 2014. NZ Falcon Survey - Wellington Region data extract. Accessed: 30 November 2014.
- ¹³ <http://www.waiwhetu.org/index.htm>.
- ¹⁴ Department of Conservation. 2014. Department of Conservation Herpetofauna Database (Bioweb). Accessed: May 2014.
- ¹⁵ Owen Spearpoint. pers comm.
- ¹⁶ NIWA. 2014. NZ Freshwater Fish Database. <https://www.niwa.co.nz/freshwater-and-estuaries/nzffd>.
- ¹⁷ Friends of Waiwhetu – Haywards Scenic Reserve. 2015. Tracks in the Hayward Scenic Reserve. <http://www.waiwhetu.org/tracks.htm>
- ¹⁸ 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.
- ¹⁹ 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.
- ²⁰ Jensen, P. 2011 Hayward Scenic Reserve Buffer Zone Survey. Greater Wellington Regional Council. 10pp.
- ²¹ Jensen, P. 2011 Hayward Scenic Reserve Buffer Zone Survey. Greater Wellington Regional Council. 10pp.
- ²² Department of Conservation. 2008. New Zealand Threat Classification System manual.
- ²³ Hugh Robertson, Department of Conservation. 2015. pers comm..
- ²⁴ Robertson H, Dowding J, Elliot G, Hitchmough R, Miskelly C, O'Donnell C, Powlesland R, Sagar P, Scofield P, Taylor G. 2013. Conservation status of New Zealand birds, 2012. *New Zealand Threat Classification Series* 4. 22p.
- ²⁵ Bell D. 2014. NZ Falcon Survey - Wellington Region data extract. Accessed: 30 November 2014.
- ²⁶ Hitchmough R, Anderson P, Barr B, Monks J, Lettink M, Reardon J, Tocher M, Whitaker T. 2013. Conservation status of New Zealand reptiles, 2012. *New Zealand Threat Classification Series* 2. 16pp.
- ²⁷ Department of Conservation. 2014. Bioweb Herpetofauna database. Accessed March 2014.
- ²⁸ Sawyer J.W.D. 2004. Plant conservation strategy, Wellington Conservancy (excluding Chatham Islands), 2004–2010. Department of Conservation, Wellington. 91 pp.
- ²⁹ Sawyer J.W.D. 2004. Plant conservation strategy, Wellington Conservancy (excluding Chatham Islands), 2004–2010. Department of Conservation, Wellington. 91 pp.
- ³⁰ Department of Conservation. 1999. Ecological Site Inventory Details – Eastern Hutt Hills Bush. 3 pp.
- ³¹ Jensen, P. 2011. Hayward Scenic Reserve Buffer Zone Survey. Greater Wellington Regional Council. 6pp.

The Greater Wellington Regional Council's purpose is to enrich life in the Wellington Region by building resilient, connected and prosperous communities, protecting and enhancing our natural assets, and inspiring pride in what makes us unique

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