Key Native Ecosystem Plan for Waterfall Road Bush

2016-2019

KNE
KEY NATIVE ECOSYSTEM

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Contents

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

Vision

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

2. Waterfall Road Bush Key Native Ecosystem

The Waterfall Road Bush KNE site (93ha) is located on the Kāpiti Coast 2km inland from the coastline at Paekākāriki (Appendix 1, Map 1). The site is predominantly kohekohe/tawa forest with regenerating kanuka scrub on steep to rolling country, and is surrounded by farming, forestry and lifestyle blocks.

The KNE site is considered an important part of the wider ecological landscape and acts as a 'stepping stone' for native birds between other important ecological areas such as Kāpiti Island, Whareroa farm and the Akatarawa Forest KNE site.

3. Landowners, management partners and stakeholders

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

3.1. Landowners

The Waterfall Road Bush KNE site is privately owned by six landowners who have been actively engaged in biodiversity restoration activities within the KNE site for several years. These activities include restoration planting, pest animal and ecological weed control and the installation of spat ropes to facilitate fish passage.

3.2. Management partners

The management partners are the private landowners, Queen Elizabeth II National Trust (QEII) and GWRC.

The landowners at the north of the KNE site have set up an initiative named the Kotukutuku Ecological Restoration Project (KERP). The KERP aims and objectives are consistent with GWRC's objectives for the KNE site as a whole and include:

- To sustain and enhance the biodiversity of the area; protect threatened species
- Return species lost to the Kāpiti conservancy area
- Research best practice restoration/conservation for this habitat and be a working model of a sanctuary on private land.

The project has already provided some community involvement and educational opportunities for other land owners, students and restoration projects. This is intended to increase over time.

Other landowners within the KNE site are supported by GWRC and QEII to undertake pest animal control within their properties. Land on one of the private properties (11ha) has been covenanted with QEII.

Within GWRC, the management partners are the Biodiversity and Biosecurity departments. The Biodiversity department is the overarching lead department for

GWRC on the coordination of biodiversity management activities and advice within the KNE site. The Biosecurity department coordinates and carries out pest control activities.

3.3. Stakeholders

Kāpiti Coast District Council (KCDC) is a stakeholder with most of the KNE site identified as an Ecological Site of Significance. KCDC engage with private landowners to provide restoration planting advice.

The Department of Conservation (DOC) is a stakeholder as they support the restoration efforts of the Kotukutuku Ecological Restoration Project (KERP) by providing funding through their Partnerships Programme.

4. Ecological values

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

4.1. Ecological designations

Table 1, below, lists ecological designations at all or part of Waterfall Road Bush KNE site.

Table 1: Designations at the Waterfall Road Bush KNE site

Designation level	Type of designation
District	Part of the KNE site has been identified by KCDC as an Ecological Site of Significance: • Wharemauku Stream Bush: KO 98 (62ha)
Other	Part of the KNE site is legally protected by a QEII open space covenant: • 5-07-360 (11ha)

4.2. Ecological Significance

The Waterfall Road Bush KNE site is considered to be of regional importance because:

- It contains highly **representative** ecosystems that were once typical or commonplace in the region
- It contains ecological features that are **rare or distinctive** in the region
- Its **ecological context** is valuable at the landscape scale as it provides core/seasonal habitat for threatened indigenous bird species within the wider landscape.

Representativeness

The Threatened Environment Classification[2] indicates that the northern extent of the KNE site consists of land considered Threatened - At Risk with only 20-30% indigenous vegetation cover remaining on this type of land environment on a national scale. Although small portions of the KNE site are classified as Acutely Threatened, this is not largely representative of the KNE site as a whole. The southern extent of the KNE site is not threatened. See Appendix 1, Map 2 for Threatened Environment Classification locations.

The Singers and Rogers (2014)[3] classification of pre-human vegetation indicates that the Waterfall Road Bush KNE site comprised kohekohe/tawa forest (MF6), and podocarp, broadleaved forest type with abundant kohekohe and frequent tawa. There is now only 15% of this forest type left in the Wellington Region[4]. Elements of these original forest ecosystems are still currently present onsite in a modified form.

Rarity/distinctiveness

New Zealand's national threat classification system[5] lists one bird, two lizard and three fish species as Nationally Threatened or At Risk within the KNE site. One plant species

present onsite is regionally threatened. Nationally Threatened species are listed in Appendix 2 and regionally threatened species in Appendix 3.

Ecological context

The Waterfall Road Bush KNE site has been noted as having high species diversity with numerous podocarp, broad-leaved, fern and orchid species recorded. As a result it is considered one of a number of important reserves for native birds in the Kāpiti district area. The KNE site acts as a key stepping stone across the Kāpiti district landscape and helps link other important areas for native birds locally such as Kāpiti Island, Queen Elizabeth Park KNE site, Akatarawa Forest KNE site, the Department of Conservation's Whareroa Park and the KCDC ecological site of Mataīhuka (Raumati Escarpment).

4.3. Ecological features

Habitats (vegetation)

The different forest and scrub vegetation provide habitats that support a variety of native plant and animal communities. There is also a stream and minor water courses running through the KNE site which provides habitat for native fish and invertebrates.

The flora of Waterfall Road Bush KNE site is very diverse[6]. Five different species of podocarp are present in the canopy including mataī (*Prumnopitys taxifolia*), miro (*Prumnopitys ferriginea*), tōtara, (*Podocarpus totara*), rimu (*Dacrydium cupressinum*) and kahikatea (*Dacrycarpus dacrydioides*). Other canopy species include tītoki (*Alectyron excelsus*), kohekohe (*Dysoxylum spectabile*), nīkau (*Rhopalostylus sapida*), tawa (*Beilschmeidia tawa*), hīnau (*Eleocarpus dentatus*), pukatea (*Laurelia novae-zelandiae*), rewarewa (*Knightia excelsa*), northern rātā (*Metrosideros robusta*), and white, black and narrow leaved maire (*Nestigis lanceolata*, *N. Cunninghamii* and *N. montana*).

Other botanical features on the site include more than 50 fern species, 13 different orchids, 11 native climbers/lianes and the regionally threatened willow-leaved maire (*Mida saliciafolia*).

Species

Birds

The Threatened - Nationally Vulnerable New Zealand falcon (*Falco novaeseelandiae*) is thought to be breeding locally. The bird has been recorded irregularly within the KNE site. Other notable bird species present include tui (*Prosthermadera novaeseelandiae*), kererū (*Hemiphaga novaeseelandiae*), Australasian harrier (*Circus approximans*) bellbird (*Anthornis melanura*), fantail (*Rhipidura fuliginosa*), silver eye (*Zosterops literalis*), grey warbler (*Gerygone igata*), black backed gull (*Larus marinus*), ruru (*Ninox novaeseelandiae*), pūkeko (*Porphyrio melanotus*) and kingfisher (*Todiramphus sanctus*)[7].

Reptiles

Four lizard species have been recorded at the KNE site including copper skink (*Oligosoma aeneum*), northern grass skink (*Oligosoma polychroma*) and the At Risk

ngahere gecko (*Mokopirirakau* 'southern North Island') and barking gecko (*Naultinus punctatus*)[8].

Fish (inc. kōura /crayfish)

Seven native fish have been recorded in streams in or near the KNE site. This includes the At Risk longfin eel (*Anguilla dieffenbachii*), redfin bully (*Gobiomorphus huttoni*) and giant kokopu (*Galaxias argentus*). Shortfin eel (*Anguilla australis*), common bully (*Gobiomorphus cotidianus*), banded kokopu (*Galaxias fasciatus*), and kōura (*Paranephrops planifrons*) are also known to be present locally[9].

Invertebrates

Over 40 species of land snail have been recorded at the KNE site[10].

5. Threats to ecological values at the KNE site

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

5.1. Key threats

The key threats are pest animals, ecological weeds and toxins from rubbish dumping entering the stream.

Pest animals are considered to be the biggest threat to KNE site's identified values. Possums (*Trichosurus vulpecula*) pose the biggest threat to the native flora by over-browsing native vegetation whilst other pest species present include mustelids (*Mustela* spp.), feral cats (*Felis cattus*), rats (*Rattus rattus, R. norvegicus*) and hedgehogs (*Erinacues europaeus*) that are known to adversely affect native bird, lizard and invertebrate populations.

Ecological weeds displace indigenous vegetation and affect the structure and composition of ecosystems. Ecological weeds are widespread across the whole KNE site but, are most abundant around the Waterfall Road.

The water quality in the Wharemauku Stream is poor. It is thought the low water quality is caused by the illegal dumping of rubbish in the watercourse.

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

Table 2: Summary table of all threats to ecological values present at the Waterfall Road Bush KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
Ecological weeds		
EW 1	Climbing weeds such as old man's beard (*Clematis vitalba*), Cape ivy (*Senecio angulatus*) and climbing asparagus (*Asparagus scandens*) smother and displace native vegetation often causing canopy collapse, inhibit indigenous regeneration, and alter vegetation structure and composition (for full ecological weed list see Appendix 4)	Entire KNE site
EW-2	Woody weed species such as wilding pines (*Pinus radiata*) and the non-local native karaka (*Corynocarpus laevigatus*) displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition (for full ecological weed list see Appendix 4)	Entire KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
EW-3	Ground covering ecological weeds such as tradescantia (*Tradescantia fluminensis*) and selaginella (*Selaginella kraussiana*) smother and displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition (for full ecological weed list see Appendix 4)	Entire KNE site
Pest animals		
PA-1	Hedgehogs (*Erinaceus europaeus*) prey on native invertebrates[11], lizards[12] and the eggs[13] and chicks of ground-nesting birds[14]	Entire KNE site
PA-2	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[15,16]	Entire KNE site
PA-3	Possums (*Trichosurus vulpecula*) browse palatable canopy vegetation until it can no longer recover[17,18]. This destroys the forest's structure, diversity and function. Possums may also prey on native birds[19] and invertebrates	Entire KNE site
PA-4	Rats (*Rattus* spp.) browse native fruit, seeds and vegetation. They compete with native fauna for food and can reduce forest regeneration. They also prey on invertebrates, lizards and native birds[20,21]	Entire KNE site
PA-5	Mustelids (stoats[22,23] (*Mustela erminea*), ferrets[24,25] (*M. furo*) and weasels[26,27] (*M. nivalis*)) prey on native birds, lizards and invertebrates, reducing their breeding success and potentially causing local extinctions	Entire KNE site
PA-6	Feral and domestic* cats (*Felis catus*) prey on native birds[28], lizards[29] and invertebrates[30], reducing native fauna breeding success and potentially causing local extinctions[31]	Operational area A (within KERP boundary)
PA-7	Rabbits (*Oryctolagus cuniculus*) and hares (*Lepus europaeus*) are known to graze on palatable native vegetation and prevent natural regeneration in some environments[32] 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-8	Wasps (*Vespula* spp.) are known to adversely impact native invertebrates and birds through predation and competition for food resources. They are also known to affect nutrient cycles in beech forests[33]	Entire KNE site
PA-9	Goats (*Capra hircus*) browsing affects the composition and biomass of native vegetation in the understory tiers of forest habitats, preventing regeneration of the most palatable understory species and reducing species diversity[34]	Entire KNE site

Human activities		
HA-1*	Agricultural practices, particularly grazing livestock can result in pugging soils, grazing native vegetation inhibiting regeneration, wildlife disturbance and increasing nutrient content of soils and watercourses[35]	Outside KNE
HA-2*	Plantation forestry on adjoining land parcels to the KNE site have the potential to cause habitat loss or degradation, disturb native wildlife, damage boundary fencing and increase sediment load in watercourses via surface run-off during harvesting operations	Outside KNE
HA-3*	Barriers to native fish passage are present in streams within the KNE site preventing migrating fish from completing their life-cycle	Streams within KNE
HA-4	Poor water quality affects a range of species in the stream. Rubbish containing pollutants and contaminants are regularly being dumped into the stream off Waterfall Road	Operational area A

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

The codes alongside each threat correspond to activities listed in the operational plan (Table 3), and are used to ensure that actions taken are targeted to specific threats. A map of operational areas can be found in Appendix 1, Map 3.

6. Management objectives

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

The following objectives will guide the management activities at the Waterfall Road Bush KNE site.

1. **To improve the structure* and function† of native plant communities**
2. **To improve the habitat for native birds**
3. **To improve the habitat for native lizards (KERP's operational area)**
4. **To engage the community in management of the KNE site**

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

7. Management activities

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

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

7.1. Ecological weed control

Ecological weed control is undertaken within the KNE site to ensure the continued regeneration of the native forest and to provide a measure of natural resilience to weed incursions that mature forest ecosystem provide.

GWRC have been undertaking ecological weed control in the KNE site for a number of years focusing targeting control on areas where weed incursions are most prevalent. In operational areas A and B ground-covering weeds such as selaginella and tradescantia will be controlled annually. In operational area A climbing weeds such as old man's beard and cape ivy will also be controlled annually (See Appendix 1, Map 3).

In addition, GWRC undertake a progressive sweep across the whole KNE site on an annual basis targeting woody weeds (such as wilding pines and non-local native plant species karaka). This will maintain the overall native species dominance and help identify any weedy hotspots in the KNE site requiring further targeted control.

Operational area C (see Appendix 1, Map 3) has been identified as an area where no toxins are permitted at the landowners request and therefore does not receive any ecological weed control using herbicide.

7.2. Pest animal control

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

A poison bait station network has been installed throughout much of the KNE site to keep possums and rats to low densities (see Appendix 1, Map 4). GWRC will service the bait station network on a quarterly basis. This network does not extend into operational area C given the landowners request for no toxins to be used on their property (see Appendix 1, Map 3).

In addition, a network of DOC200 kill-traps and Timms kill-traps targeting pest animal predators, such as mustelids (and hedgehogs although they are not the primary target) has been installed across the KNE site. The kill-trap network will continue to be serviced on a monthly basis by the private landowners. GWRC will provide an annual maintenance service of the entire pest animal network.

Rabbit, goat and wasp control is undertaken by the private landowners on their own properties on an ad hoc basis. Rabbits are controlled by shooting or burrow fumigation; goat control is undertaken by shooting; and wasp nests once located are poisoned. All these activities will help to reduce the impact of these animals across the KNE site.

Within KERP's operational area (5ha) an intensive pest animal network has been set up in addition to GWRCs poison bait station network in this area. This network targets the control of rats, mice, feral cats, hedgehogs and mustelids (See Appendix 1, Map 5 for KERP pest animal network illustration) and has been set up in consultation with DOC. The network includes the following control methods:

- Rat/mouse control using poison bait stations
- Mustelid control using DOC 200 and DOC 250 kill-traps
- Feral cat control using four live cage traps

7.3. Community engagement

KCDC will work with the wider community and private landowners from operational area A to raise awareness of the impact of illegal rubbish dumping off Waterfall Road on the stream.

8. Operational plan

The operational plan shows the actions planned to achieve the stated objectives for Waterfall Road Bush KNE site and their timing and cost over the three-year period from 1 July 2016 to 30 June 2019. The budget for the 2017/18 and 2018/19 years are indicative only and subject to change. A map of operational areas can be found in Appendix 1, Map 3).

Table 4: Three-year operational plan for the Waterfall Road Bush KNE site

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable and resourcing		
							2016/17	2017/18	2018/19
1	EW-1, EW-3	Ecological weed control (Climbers & groundcovers	A	GWRC Biosecurity department	Targeted control of ecological weeds by cut/treat and spraying of climbers and spraying of groundcovers	Reduction in distribution and abundance weeds	$2,000	$2,000	$2,000
1	EW-3	Ecological weed control (groundcovers)	B	GWRC Biosecurity department	Targeted control by spraying groundcovers	Reduction in distribution and abundance weeds	$300	$300	$300
1	EW-2	Ecological weed control (Woody weeds)	Entire KNE site (except operational area C)	GWRC Biosecurity department	Annual progressive control by basal spay or cut and treat of woody weeds	Reduction in distribution and abundance of woody weeds	$700	$700	$700
1, 2	PA-1, PA-3, PA-4, PA-5	Pest animal control	Entire KNE site	Landowners	DOC200 and Timms kill-trap servicing. All traps checked monthly	Rats <10% TTI** Mustelids <5% TTI**	Nil	Nil	Nil
1,2	PA-1, PA-3, PA-4, PA-5	Pest animal control	Entire KNE site (no bait stations in C)	GWRC Biosecurity department	Quarterly maintenance of bait stations and annual service of predator traps	Possums <5% RTC * Rats <10% TTI** Mustelids <5% TTI**	$6,400	$6,400	$6,400

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable and resourcing		
							2016/17	2017/18	2018/19
1,2,3	PA-1, PA-2, PA-3, PA-4, PA-5, PA-6	Pest animal control	A	Landowner	KERP intensive bait station and trap network servicing	Possums <5% RTC * Rats <10% TTI** Mustelids <5% TTI**	Nil	Nil	Nil
1, 2	PA-8 PA-9	Pest animal control	All KNE except C	Landowners	Ad hoc rabbit, goat and wasp nest control by landowners on their properties	Culling of any goats recorded; all detected wasp nests poisoned; and rabbits controlled as necessary in the KNE site	Nil	Nil	Nil
4	HA-4	Community Engagement	A	KCDC	Work with landowners to reduce waste dumping off Waterfall Road into stream	Reduction in rubbish dumping incidences	Nil	Nil	Nil
						Total	**$9,400**	**$9,400**	**$9,400**

*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 regime has been designed to control rats/mustelids 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 contributions

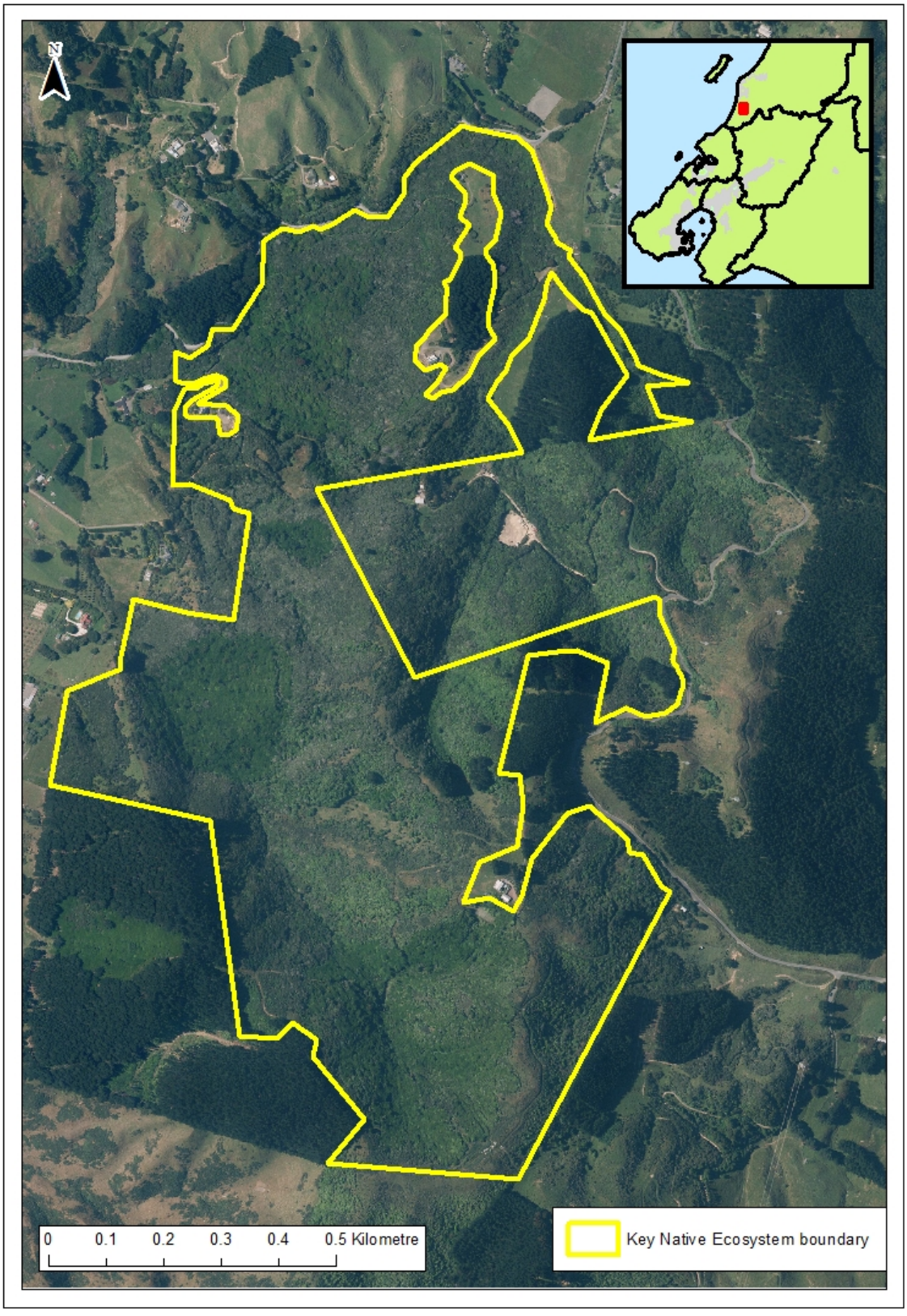
9.1. Budget allocated by GWRC

The budget for the 2017/18 and 2018/19 years are indicative only and subject to change.

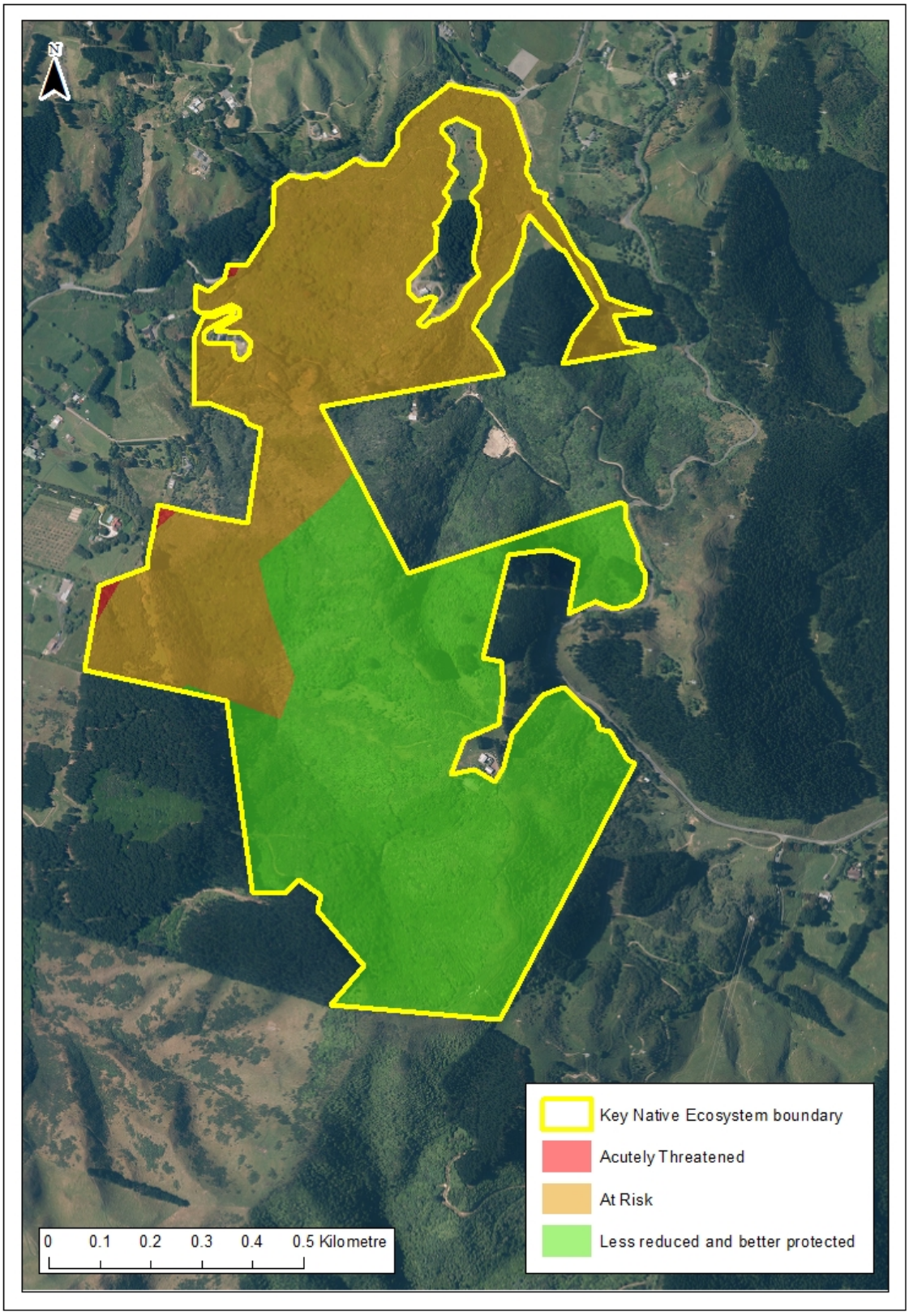
Table 5: GWRC allocated budget for the Waterfall Road Bush KNE site

Management activity	Timetable and resourcing		
	2016/17	2017/18	2018/19
Ecological weed control	$3,000	$3,000	$3,000
Pest animal control	$6,400	$6,400	$6,400
Total	**$9,400**	**$9,400**	**$9,400**

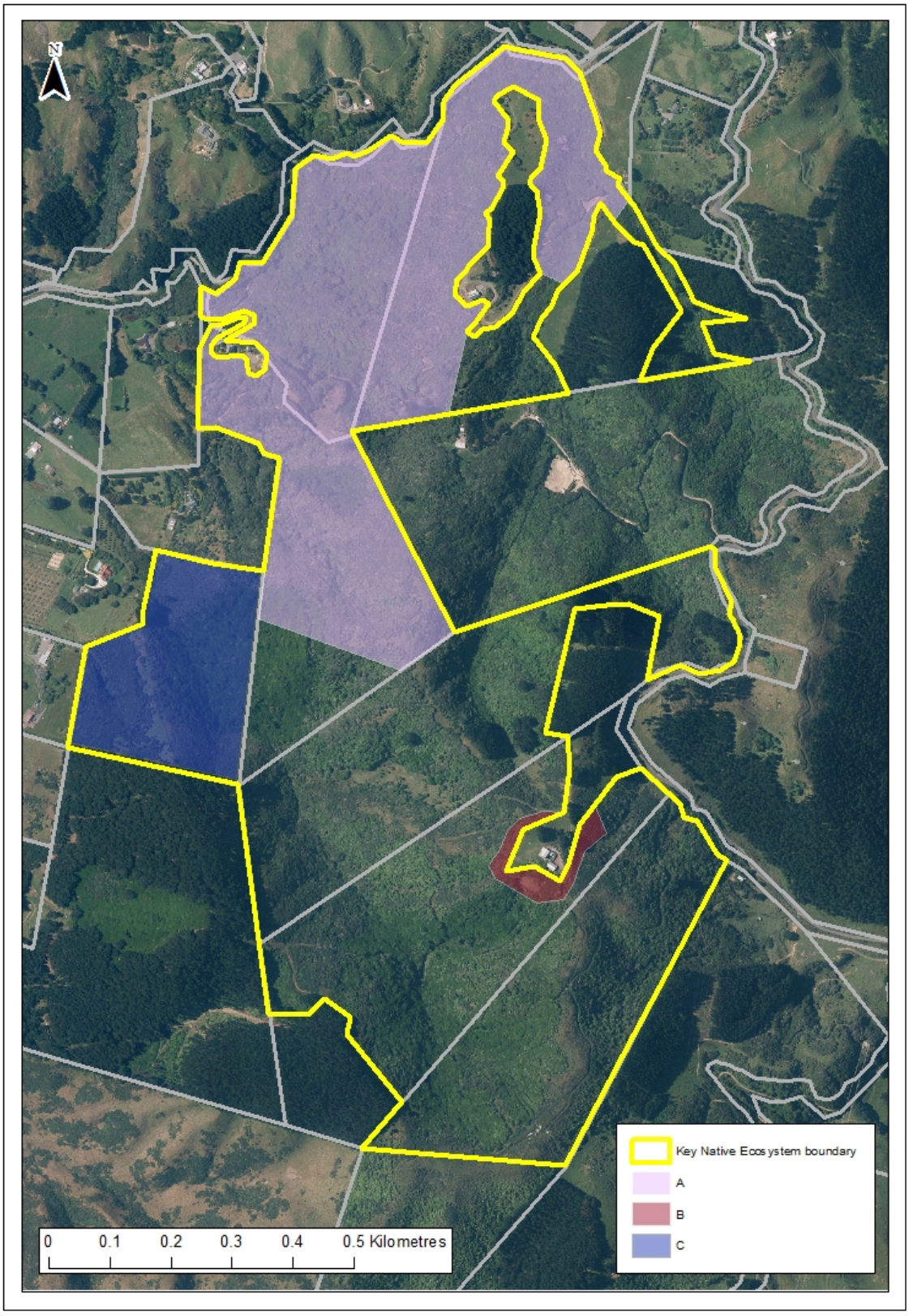
Appendix 1: Site maps



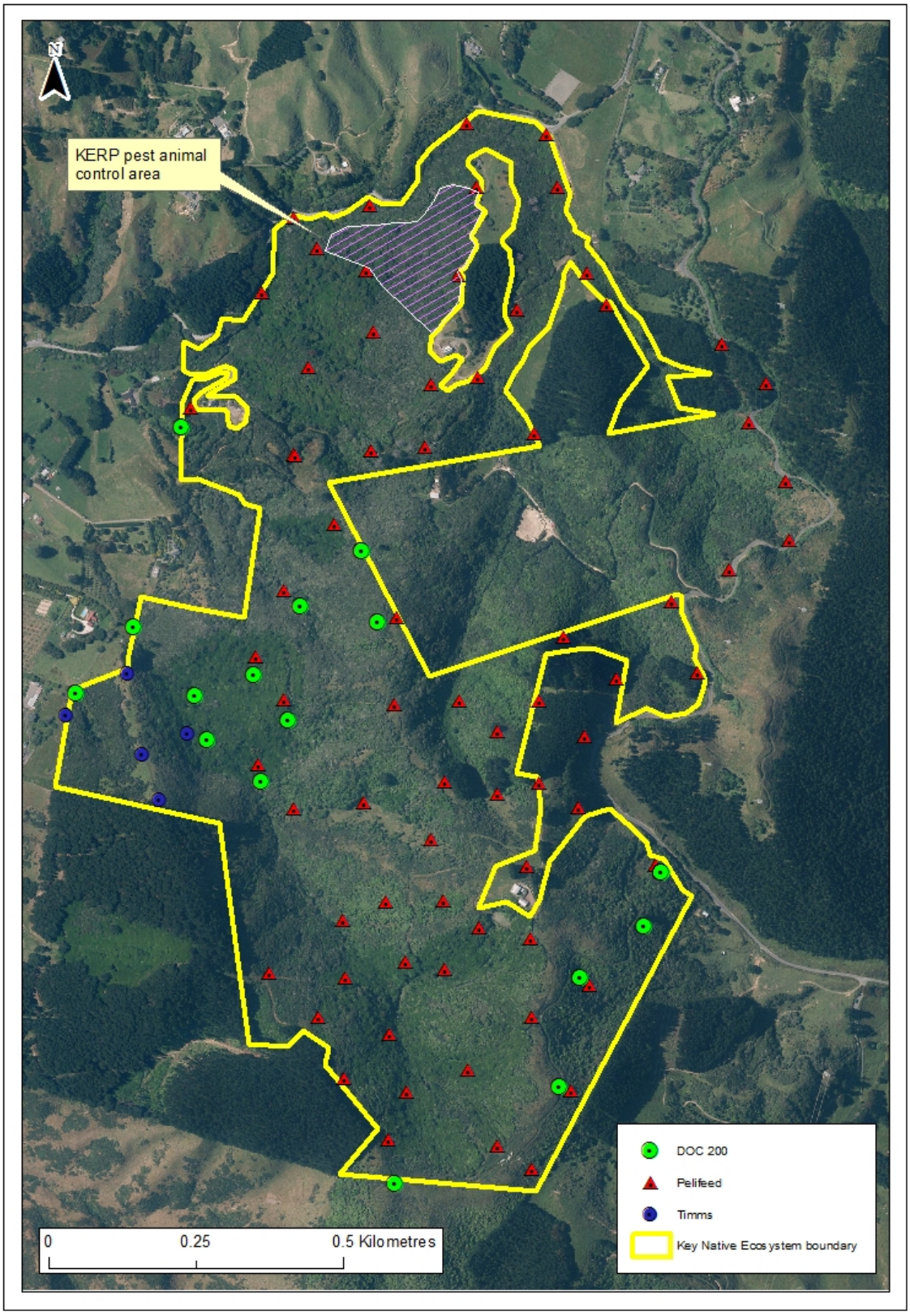
Map 1: The Waterfall Road Bush KNE site boundary



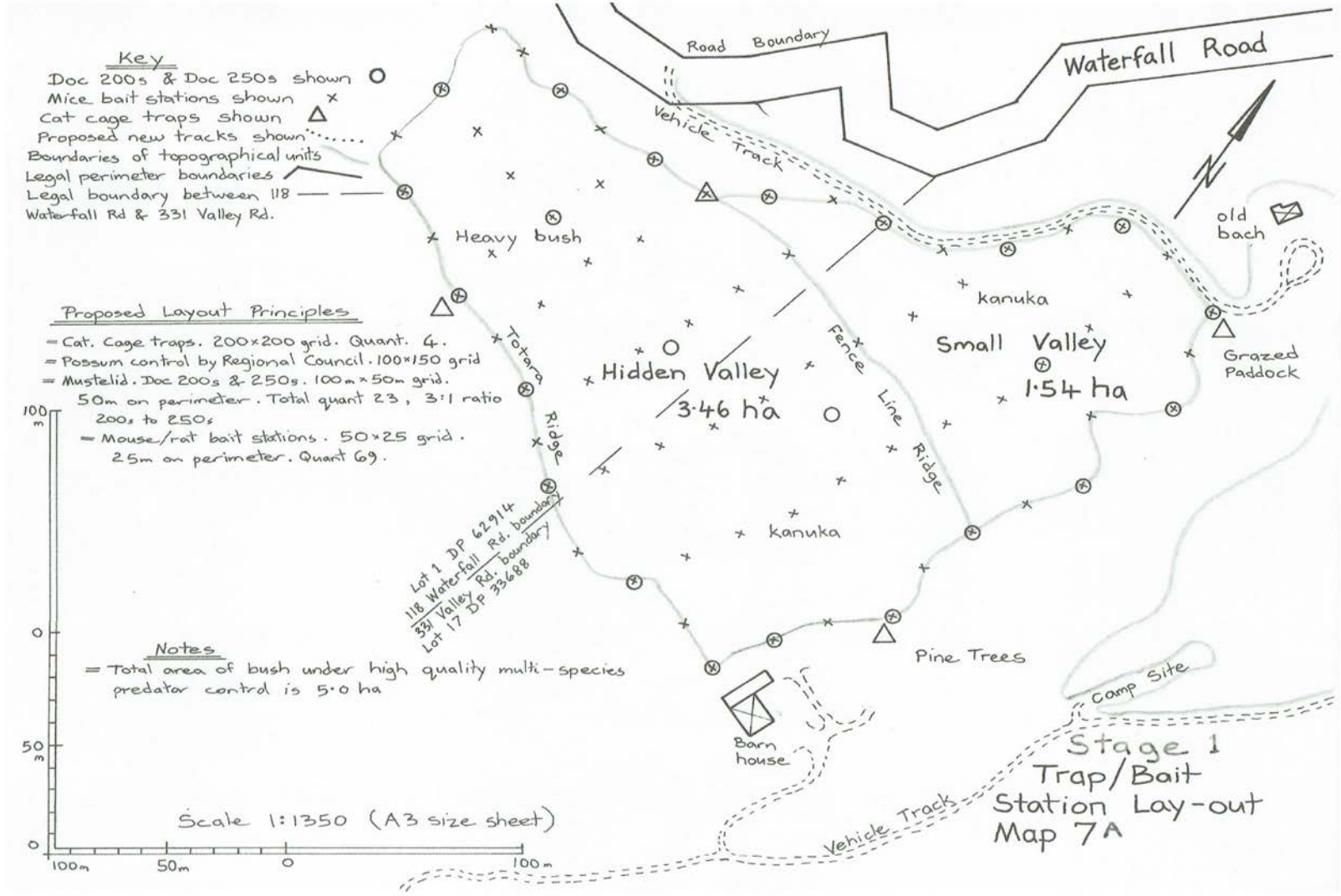
Map 2: Land Environment New Zealand threat classification map for the Waterfall Road Bush KNE site



Map 3: Operational areas in the Waterfall Road Bush KNE site



Map 4: Pest animal control in the Waterfall Road Bush KNE site



Map 5: Pest animal control in the KERP area of Waterfall Road Bush KNE site

Appendix 2: Nationally threatened species list

The New Zealand Threat Classification System lists species according to their threat of extinction. The status of each species group (plants, reptiles, etc) is assessed over a three-year cycle[36], with the exception of birds which are assessed on a five-year cycle[37]. 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 Waterfall Road Bush KNE site.

Table 7: Threatened and At Risk species at the Waterfall Road Bush KNE site.

Scientific name	Common name	Threat status	Observation
Birds[38]			
Falco novaeseelandiae	New Zealand falcon	Nationally vulnerable	Kiernan, pers obs 2016
Reptiles[39]			
Mokopirirakau 'southern North Island'	Ngahere gecko	At Risk - Declining	Kiernan, pers comm 2015
Naultinus punctatus	Barking gecko	At Risk - Declining	Kiernan, pers comm 2015
Freshwater fish[40]			
Anguilla dieffenbachii	Longfin eel	At Risk - Declining	NZTA 2012[41]
Galaxias argenteus	Giant kokopu	At Risk - Declining	NZTA 2012
Gobiomorphus huttoni	Redfin bully	At Risk - Declining	NZTA 2012

Appendix 3: Regionally threatened plant species list

The following table lists regionally threatened species that have been recorded in the Waterfall Rd Bush KNE site. Native plant species have been identified in the Plant Conservation Strategy, Wellington Conservancy 2004-2010[42].

Table 8: Regionally threatened plant species recorded in the Waterfall Road Bush KNE site

Scientific name	Common name	Threat status	Observation
Plants			
Mida salicifolia	Willow-leaved maire	Gradual decline	Kiernan, pers obs 2015

Appendix 4: Ecological weed species

The following table lists key ecological weed species that have been recorded in the Waterfall Road Bush KNE site.

Table 9: Ecological weed species recorded in the Waterfall Road Bush KNE site

Scientific Name	Common Name	Relative impact	Tier	Notes
Agapanthus praecox	Agapanthus	Low	Groundcover	Localised and abundant
Asparagus scandens	Climbing asparagus	High	Climber	Localised and abundant
Clematis vitalba	Old man's beard	Very high	Climber	Widespread and sparse
*Corynocarpus laevigatus**	Karaka	High	Woody weed	Widespread and patchy
Crocosmia X *crocosmiifolia*	Montbretia	Low	Groundcover	Localised and patchy
Erica lusitanica	Spanish heath	Low	Woody weed	Localised and abundant
Passiflora spp.	Banana passionfruit	Very high	Climber	Widespread and patchy
Rubus fruticosus agg.	Blackberry	Moderate	Climber	Localised and abundant
Selaginella kraussiana	Selaginella	High	Groundcover	Scattered and abundant
Senecio angulatus	Cape ivy	High	Climber	Localised and sparse
Tradescantia fluminensis	Tradescantia	High	Groundcover	Scattered and sparse
Ulex europaeus	Gorse	Moderate	Woody weed	Localised and abundant

** Denotes a non-local native plant*

References

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