

# Key Native Ecosystem Plan for Keith George Memorial Park

2015-2018



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 2011-21<sup>1</sup> 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. Keith George Memorial Park Key Native Ecosystem

Keith George Memorial Park KNE site (167ha) includes the forest remnants and regenerating scrub of Keith George Memorial Park and Silverstream Scenic Reserve, and an area of privately owned pine forest plantation. It is located on the southeast-facing slopes above the Hutt River, off the junction of SH2 and SH58 in Upper Hutt (see Appendix 1, Map 1).

The KNE site, a forest consisting predominately of tawa (*Beilschmiedia tawa*) and beech (*Fuscospora* spp.) with scattered podocarps, lies within a largely-contiguous belt of indigenous forest and regenerating scrub along the western slopes of the Hutt Valley that also includes Belmont Regional Park, Trentham Scenic Reserve and the Akatawara Forest Park.

### Landowners 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.

#### Landowners

Keith George Memorial Park and Silverstream Scenic Reserve are owned and managed by Upper Hutt City Council (UHCC).

An area of approximately 30 ha within the KNE site is privately owned by Ian Osbourne and managed as a radiata pine (*Pinus radiata*) plantation. The landowner has permitted GWRC to carry out possum control within this area.

Land management boundaries are indicated on Map 2.

#### Management partners and key stakeholders

UHCC and GWRC are the management partners for this KNE site. Both have been actively involved in planning and funding biodiversity management at the site for a number of years.

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

Transpower has the right of access through the KNE site to maintain overhead power cable and pylons and are considered a stakeholder for this KNE site.

#### 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 comprised of a canopy of tawa and beech with scattered podocarps. The understory is dominated by māhoe (*Melicytus ramiflorus*) and kāmahī (*Weinmannia racemosa*). The area under radiata pine plantation has significant areas of regenerating native scrub contiguous with the forest reserves providing connectivity benefits within the KNE site. The site has well-established forested cover, with steep gullies that contain several small tributaries of the Hutt River (Te Awa Kairangi). The beech stands represent the southern-most extent of beech on the western side of the North Island.

The KNE site lies within Wellington Ecological District<sup>2</sup> which is characterised by steep, strongly faulted hills and ranges and the large Hutt River valley. The climate is wet and windy, with warm summers and mild winters. Vegetation within the KNE site is considered to be in a modified condition having previously been logged in the 19<sup>th</sup> century.

Of note in recognising the ecological values at the Keith George Memorial Park KNE site are the following:

**Threatened environments:** The Threatened Environment Classification<sup>3</sup> indicates that small areas on the periphery of this KNE site are classified as Acutely Threatened. However, this is not considered representative of the KNE site which predominately consists of habitat that is either At Risk or Well Protected (see Appendix 1, Map 3).

**Threatened species:** Two At Risk plant species, one threatened and one At Risk bird species have been recorded within the KNE site. Nationally threatened species are listed in Appendix 2 and regionally threatened species in Appendix 3.

The Singers and Rogers (2014)<sup>4</sup> classification of pre-human vegetation indicates the KNE site comprised two moist-forest (MF) types. MF7, containing predominantly tawa, kamahi, podocarp forest species, and MF8 typified by kamahi, broadleaved, podocarp forest species. Only 22% of the pre-human extent of the MF7 forest type remains in the Wellington region making it a regionally At Risk ecosystem type. The MF8 forest type is Not Threatened regionally with 85% of the original extent remaining in the region<sup>5</sup>.

The dominant vegetation communities currently present within the KNE site are described by the Department of Conservation's ecological site inventory<sup>6</sup> as:

- Tawa
- Māhoe
- Hard beech/black beech
- Māhoe/mixed broadleaf
- Radiata pine plantation
- Kamahi scrub and low forest
- Māhoe/tutu/koromiko/rangiora
- Beech-tawa-kāmahī

- Mānuka/gorse scrub

The KNE site has high indigenous plant diversity, with 75 tree, 16 liane (vine), 24 grass, 62 herb and 61 fern species recorded within the site. Remnant mature rimu (*Dacrydium cupressinum*), tōtara (*Podocarpus totara*), northern rātā (*Metrosideros robusta*), kahikatea (*Dacrycarpus dacrydioides*), mataī (*Prumnopitys taxifolia*), and miro (*P. ferruginea*) are also still present<sup>7</sup>.

The KNE site is part of an important network of bush reserves in the Hutt Valley providing significant habitat for a range of forest bird species. Species recorded at the KNE site include the New Zealand falcon (*Falco novaeseelandiae*), tomtit (*Petroica macrocephala*), bellbird (*Anthornis melanura*), red-crowned parakeet (*Cyanoramphus novaezelandiae novaezelandiae*), tūī (*Prothemadera novaeseelandiae*), kererū (*Hemiphaga novaeseelandiae*), whitehead (*Mohoua albicilla*) and grey warbler (*Gerygone igata*)<sup>8</sup>.

While there are no records for reptiles within the site, the barking gecko (*Naultinus punctatus*) and the ngahere gecko (*Mokopirirakau* 'southern North Island') have been recorded in the vicinity and suitable habitats are present at the site<sup>9</sup>.

The KNE site contains several streams leading into the Hutt River. These streams may support a variety of native freshwater fish and aquatic invertebrates.

### 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 the impacts of ecological weed and pest animal incursions.

Ecological weeds are widespread throughout the KNE site ranging from mature wilding pine trees to ground-covering plant species. The largest infestations are known to be present on the outer edge of the KNE site and where the KNE site intersects with tracks. See Appendix 4 for a list of ecological weed species recorded in the KNE site.

The priority pest animal threats within the KNE site are possums (*Trichosurus vulpecula*), rats (*Rattus* spp.) and mustelids (*Mustela* spp.). Active widespread control of these species has taken place within the KNE site for many years, as these species are known to have impacts on native forest regeneration, food resources and can predate on native birds, lizards and invertebrates. Additional pest animal threats, such as goats (*Capra hircus*), and hedgehogs (*Erinaceus europeaeus*) have been identified but are controlled sporadically or via operations targeting other pest animal species.

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 ecological values present at the Keith George Memorial Park 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. 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
<b>Ecological weeds</b>		
EW-1	Ground-covering ecological weeds smother and displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key weed species for control include tradescantia ( <i>Tradescantia fluminensis</i> ), selaginella ( <i>Selaginella kraussiana</i> ) and montbretia ( <i>Crocasmia × crocosmiiflora</i> ).	1, 2 & 3
EW-2	Climbing weeds smother and displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key weed species include old man's beard ( <i>Clematis vitalba</i> ), cathedral bells ( <i>Cobaea scandens</i> ), banana passionfruit ( <i>Passiflora tripartita</i> var. <i>mollissima</i> ), English ivy ( <i>Hedera helix</i> subsp. <i>helix</i> ), Japanese honeysuckle ( <i>Lonicera japonica</i> ), and jasmine ( <i>Jasminum polyanthum</i> ).	1, 2 & 3
EW-3	Woody weed species displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key weed species include buddleia ( <i>Buddleja davidii</i> ), Spanish heath ( <i>Erica lusitanica</i> ), Darwin's barberry ( <i>Berberis darwinii</i> ), and broom ( <i>Cytisus scoparius</i> ). Radiata pine plantings are present in the site and are a source of wildings.	Entire site
EW-4	Ecological weeds are likely to reinvade from outside the KNE site. They can be carried by wind, birds (native and exotic), other animals, machinery, bikes, horses and people (including those carrying out management operations).	Entire site
<b>Pest animals</b>		
PA-1	Possums eat the leaves and shoots and strip the bark of many native plants, consuming large quantities of foliage in a night. Possums do not graze like other species, but often concentrate their browsing on one tree, causing extensive damage. Possums also pose a threat to native birds, both through competition for food and direct predation on their eggs and young.	Entire site and buffer zone
PA-2	Mustelids prey on native insects, lizards and birds and their eggs. Mustelids pose a particular threat to hole-nesting and ground-dwelling bird species.	Entire site and buffer zone
PA-3*	Goat incursions from neighbouring properties are intermittent. Goats browse native vegetation, preventing regeneration of the most palatable species and reducing species diversity.	Entire site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
PA-4(*)	Rats and mice* ( <i>Mus musculus</i> ) browse native fruit, seeds and vegetation, and prey on invertebrates, lizards and native birds <sup>10</sup> . They compete with native fauna for food and can reduce forest regeneration.	Entire site and buffer zone
PA-5*	Feral and domestic cats ( <i>Felis catus</i> ) prey on native birds, lizards and invertebrates, reducing native fauna breeding success and potentially causing local extinctions.	Entire KNE site
PA-6	Hedgehogs prey on native invertebrates, lizards <sup>11</sup> and the eggs <sup>12</sup> and chicks of ground-nesting birds.	Entire KNE site
PA-7*	Eastern rosella ( <i>Platycercus eximius</i> ) parakeets are known to out-compete native red-crowned parakeets for nest-sites and are a vector of avian diseases <sup>13,14</sup> . The continued presence of eastern rosella in the KNE could limit the ability of red-crowned parakeets to establish functional populations.	Entire KNE site
<b>Human activities</b>		
HA-1	Dumping of garden waste and rubbish is one of the main ways in which weeds can become established in the site. Generally this occurs along the edges of the site within close proximity to roads. Rubbish can also provide habitat and food for rodents and potentially other predators.	1, 2 & 3
HA-2*	Recreational use. There are several well-maintained walking tracks within the KNE site. There are risks to vegetation and habitats posed by disturbance and rubbish.	Car parks, tracks
HA-3*	Electricity transmission line maintenance activities may transport weeds and cause physical damage to vegetation or habitat loss.	Transmission line easement
HA-4*	Forestry activities such as tree felling and operation of machinery can damage indigenous vegetation and cause sedimentation of waterways.	Areas adjacent to plantation forestry
<b>Other threats</b>		
OT-1*	Erosion and slips create environments susceptible to weed invasion.	Entire 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 Keith George Memorial Park KNE site.

- 1. To improve the structure\* and function† of native plant communities**
- 2. To improve the habitat for native birds**
- 3. To raise community awareness of the ecological values of the KNE site**

\* The living and non-living physical features of an ecosystem. This includes the size, shape, complexity, and condition of plant communities, and the diversity of species and habitats within them.

† The biological processes that occur in an ecosystem. This includes seed dispersal, natural regeneration, and the provisioning of food and habitat for animal species.

#### Management activities

Management activities are targeted to work towards 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. This is discussed in the broad management approach.

Pest animal control and ecological weed control is undertaken within this KNE site. These activities are undertaken to encourage natural regeneration of the native forest cover and to provide protection for native fauna from predation and competition.

#### Ecological weed control

Ecological weed control is coordinated by GWRC but jointly funded by both management partners. Ecological weed control is undertaken in three operational areas (A-C) to maintain native plant dominance encouraging the natural regeneration of the forest. The operational areas have different focuses based on the needs identified in each area. These are:

- Operational Area A – Old man’s beard and tradescantia control
- Operational Area B – Multi-species ecological weed sweep
- Operational Area C – Selaginella sweep through a stream corridor

Operational area A is a steep escarpment with access difficulties. As a result, old man’s beard control is undertaken utilising qualified abseil contractors to cut the vine stems and administer an herbicide gel, once safe rope access has been established. Operational area A has a long standing issue with old man’s beard infestations and although previous control has been effective, continued control of old man’s beard is likely to be required for the three years of this plan. Operational area A also has

widespread infestations of tradescantia that will be controlled using a foliar herbicide spray.

Operational area B has a range of ecological weed species present that require control to ensure the continued regeneration of the native forest cover. A multispecies ecological weed sweep will be undertaken in this area initially focusing on the highest biodiversity value areas and working out towards the KNE site boundary. Control will be primarily focused on climbing species such as old man's beard and Japanese honeysuckle (*Lonicera japonica*) to ensure the canopy stays intact and light wells are not opened up. Where encountered, ground covering species such as tradescantia and woody species such as buddleia and wilding pine will be targeted in the sweep to ensure that the understory is able to develop.

Appendix 3 contains a list of ecological weed species for control based on previous years control operations. Operational area C will have targeted selaginella control through the stream corridor where the plant is widespread. The control will work progressively downstream on an annual basis as time and budget allows.

Records will be kept of what has been controlled each year and will inform the identified priorities for the following season's ecological weed control.

### **Pest animal control**

A large-scale network of pest animal control has been developed by GWRC and UHCC across the KNE site and buffer zone areas to protect native ecosystems and species from the effects of possums, rats and mustelids.

A combination of Pelifeed poison bait-stations serviced with anticoagulant bait and DOC 200 kill-traps have been installed across the whole KNE site and adjacent buffer zone as part of this strategy (see Appendix 1, map 5). These control methods are known to keep possum, rat and mustelid numbers to low densities aiding native forest regeneration and providing a safer habitat for foraging and nesting native birds.

GWRC will service bait stations and traps every three months.

### **Community engagement**

GWRC will raise community awareness of the threat to the KNE site values posed by the dumping of garden waste and trash. A letter will be sent to local residents alerting them to the impacts of garden waste and trash dumping on the KNE site and, how to report sightings of these activities to UHCC.

### **Bird monitoring**

UHCC funds bird monitoring in a number of reserves in Upper Hutt, including at Keith George Memorial Park KNE site. Five-minute bird counts are undertaken annually to assess trends in abundance, diversity and distribution of native birds across UHCC parks and reserves and are used to monitor the success of the management activities they fund. UHCC will continue to fund this monitoring.

## 4. Operational plan

The operational plan shows the actions planned to achieve the stated objectives for the Keith George Memorial Park 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. A map of Operational areas can be found in Appendix 1 (see Map 4).

**Table 2: Three-year operational plan for the Keith George Memorial Park KNE site.**

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable and resourcing		
							2015/16	2016/17	2017/18
1,2	EW - 2	Ecological weed control	A	Biosecurity department	Targeted old man's beard control utilising an abseil contractor	Reduction in the distribution and abundance of ecological weed species	\$5,000	\$5,000	\$5,000
1	EW - 1	Ecological weed control	A	Biosecurity department	Targeted tradescantia control	Reduction in the distribution and abundance of ecological weed species	\$1,000	\$1,000	\$1,000
1,2	EW – 1,2,3	Ecological weed control	B	Biosecurity department	Multi-species weed sweep targeting a range of species (see Appendix 4)	Reduction in the distribution and abundance of ecological weed species	\$6,000	\$6,000	\$6,000
1	EW - 1	Ecological weed control	C	Biosecurity department	Targeted selaginella control in stream corridor	Reduction in the distribution and abundance of ecological weed species	\$1,000	\$1,000	\$1,000
1,2	PA – 1,3,4,6	Pest animal control	KNE site and adjacent buffer zone	Biosecurity department	Service all Pelifeed bait-stations and DOC 200 kill-traps every three months	Possums <5%RTC* Rats <10% TTI** Mustelids <2% TTI**	\$12,900	\$12,900	\$12,900
3	HA - 1	Community engagement	N/A	Biodiversity department	Letter drop to local residents regarding dumping of trash and garden waste	Letter sent in 2015/16	Nil	Nil	Nil
2	PA – 1, 2,4,6	Bird monitoring	Entire KNE site	UHCC	Five-minute bird count	Annual bird survey and reporting completed	\$***	\$***	\$***
						Total	\$25,900	\$25,900	\$25,900



\*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 to this level but monitoring will not be undertaken. Experience in the use of this control method indicates this target will be met.

\*\*\* UHCC fund bird monitoring across several sites annually including Keith George Memorial Park totalling \$2,000.

## 5. Funding summary

### GWRC budget

The budget for the 2016/17 and 2017/18 years are indicative only.

**Table 3: GWRC Allocated budget for the Keith George Memorial Park KNE site.**

Management activity	Timetable and resourcing		
	2015/16	2016/17	2017/18
Ecological weed control	\$6,500	\$6,500	\$6,500
Pest animal control	\$10,900	\$10,900	\$10,900
<b>Total</b>	<b>\$17,400</b>	<b>\$17,400</b>	<b>\$17,400</b>

### Other contributions

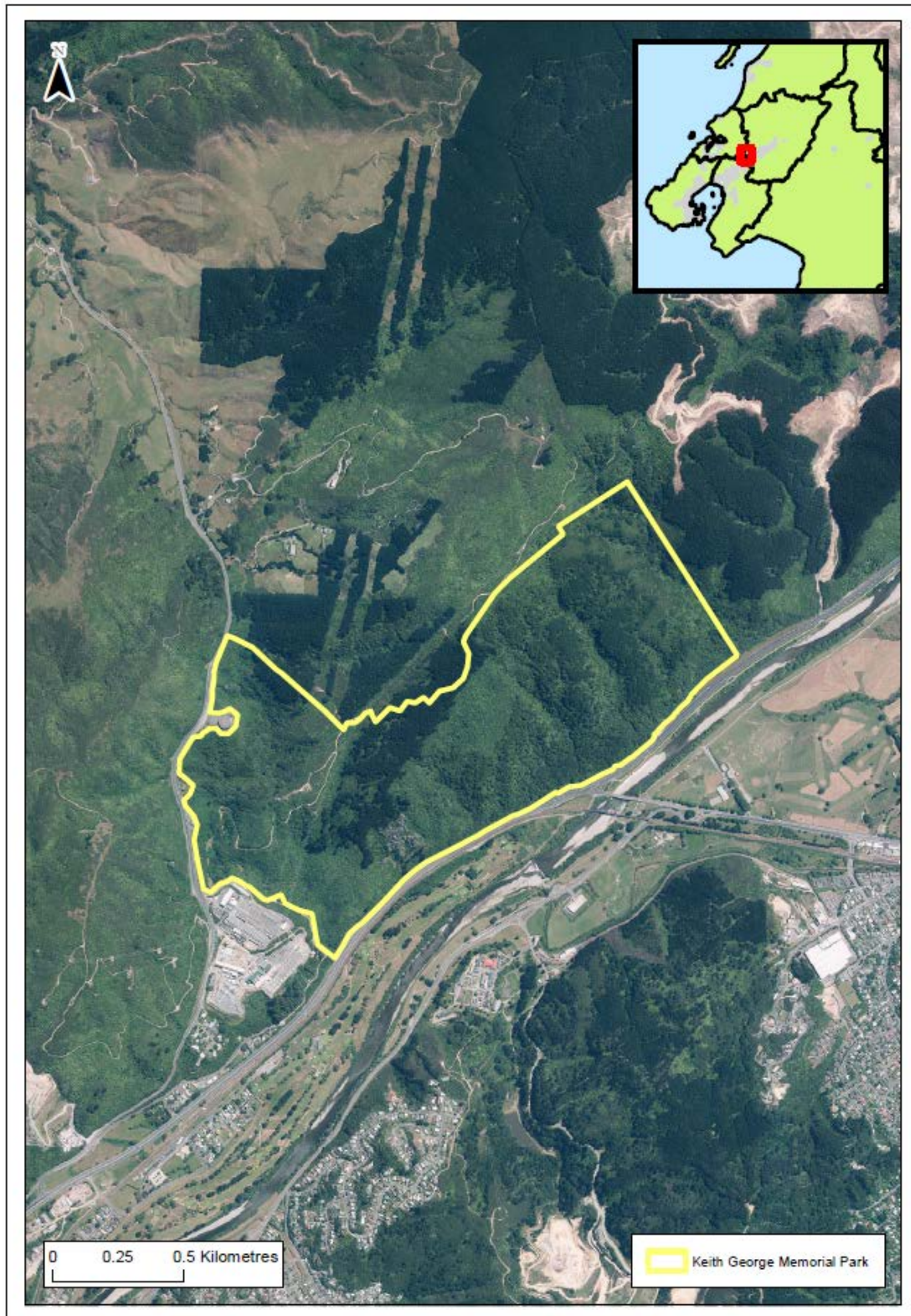
The budget is subject to confirmation through UHCC's long term planning process.

**Table 4: Additional allocated budget for the Keith George Memorial Park KNE site from UHCC.**

Management activity	Timetable and resourcing		
	2015/16	2016/17	2017/18
Ecological weed control	\$6,500	\$6,500	\$6,500
Pest animal control	\$2,000	\$2,000	\$2,000
Bird monitoring	\$***	\$***	\$***
<b>Total</b>	<b>\$8,500</b>	<b>\$8,500</b>	<b>\$8,500</b>

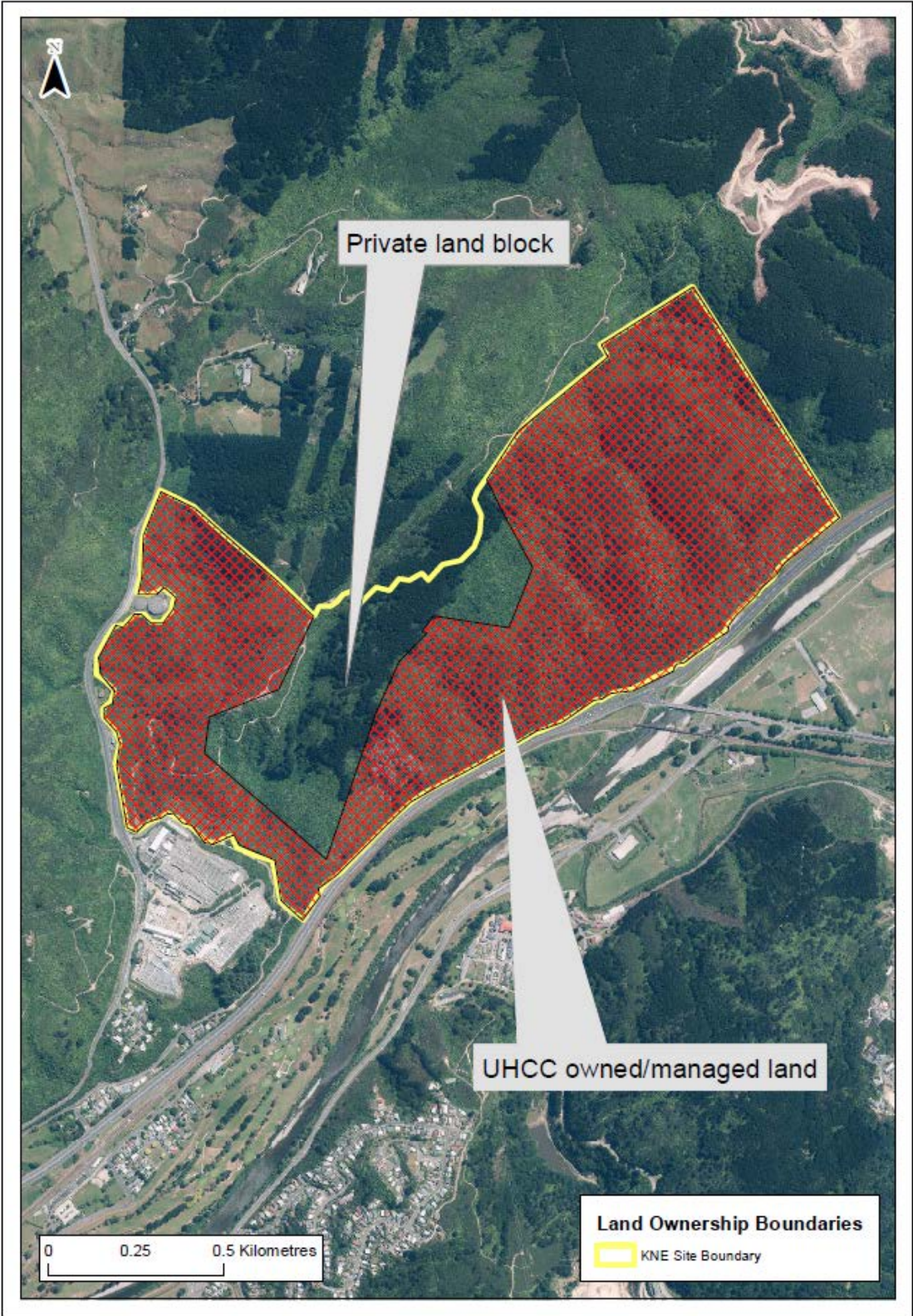
\*\*\* UHCC fund bird monitoring across several sites annually including Keith George Memorial Park totalling \$2,000.

## Appendix 1: Site map



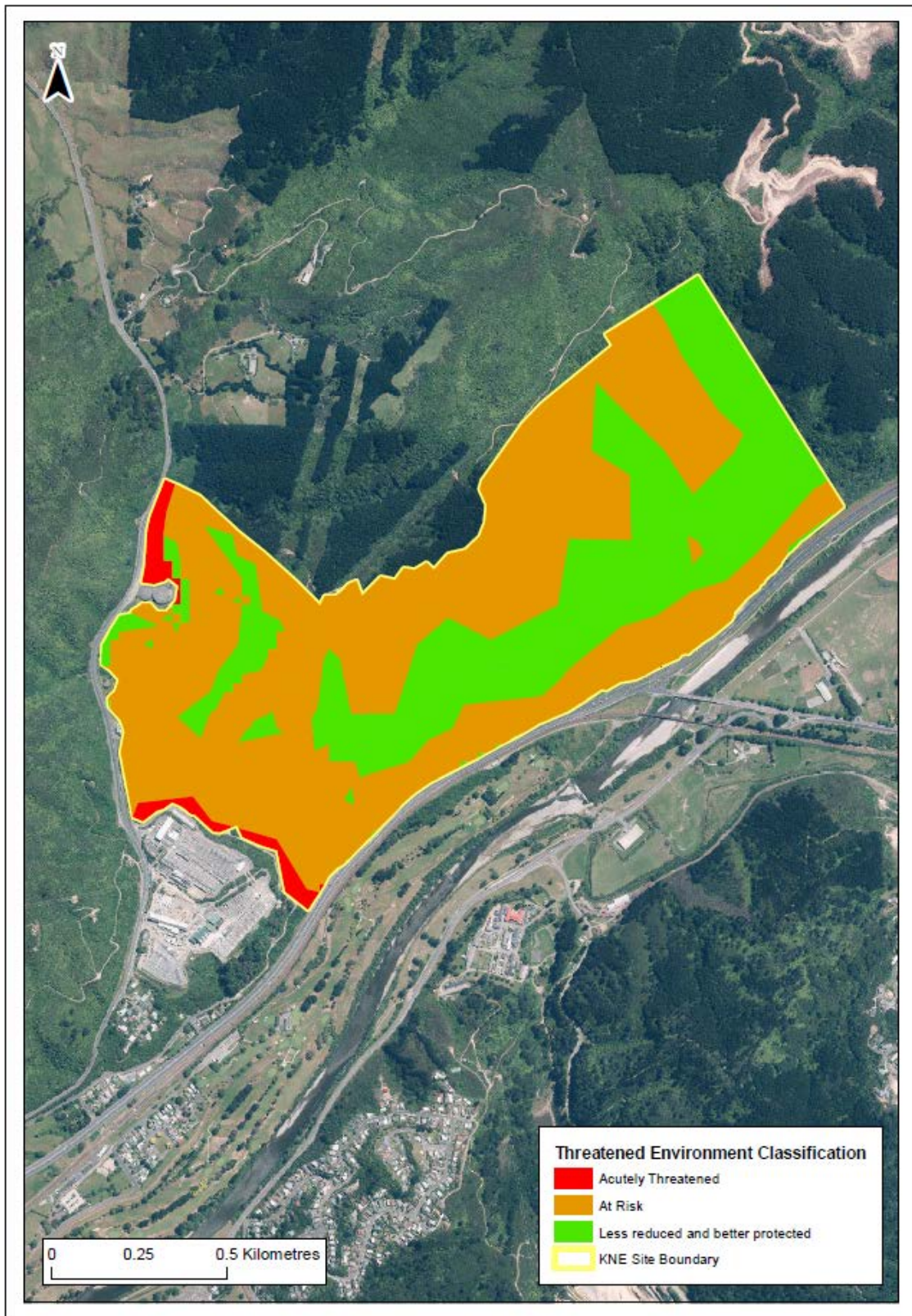
Map 1: Keith George Memorial Park KNE site boundary.





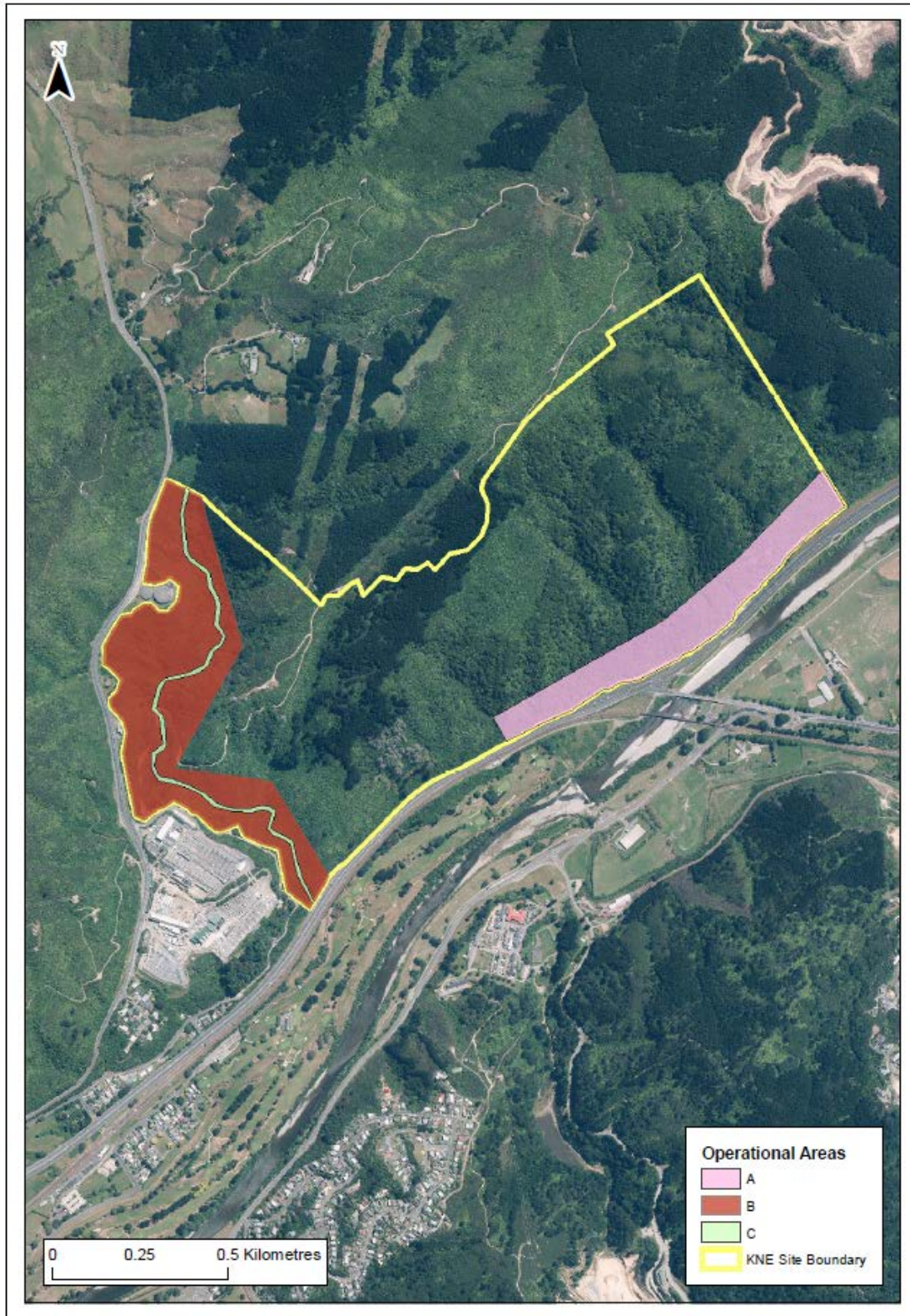
Map 2: Keith George Memorial Park KNE land ownership boundaries.





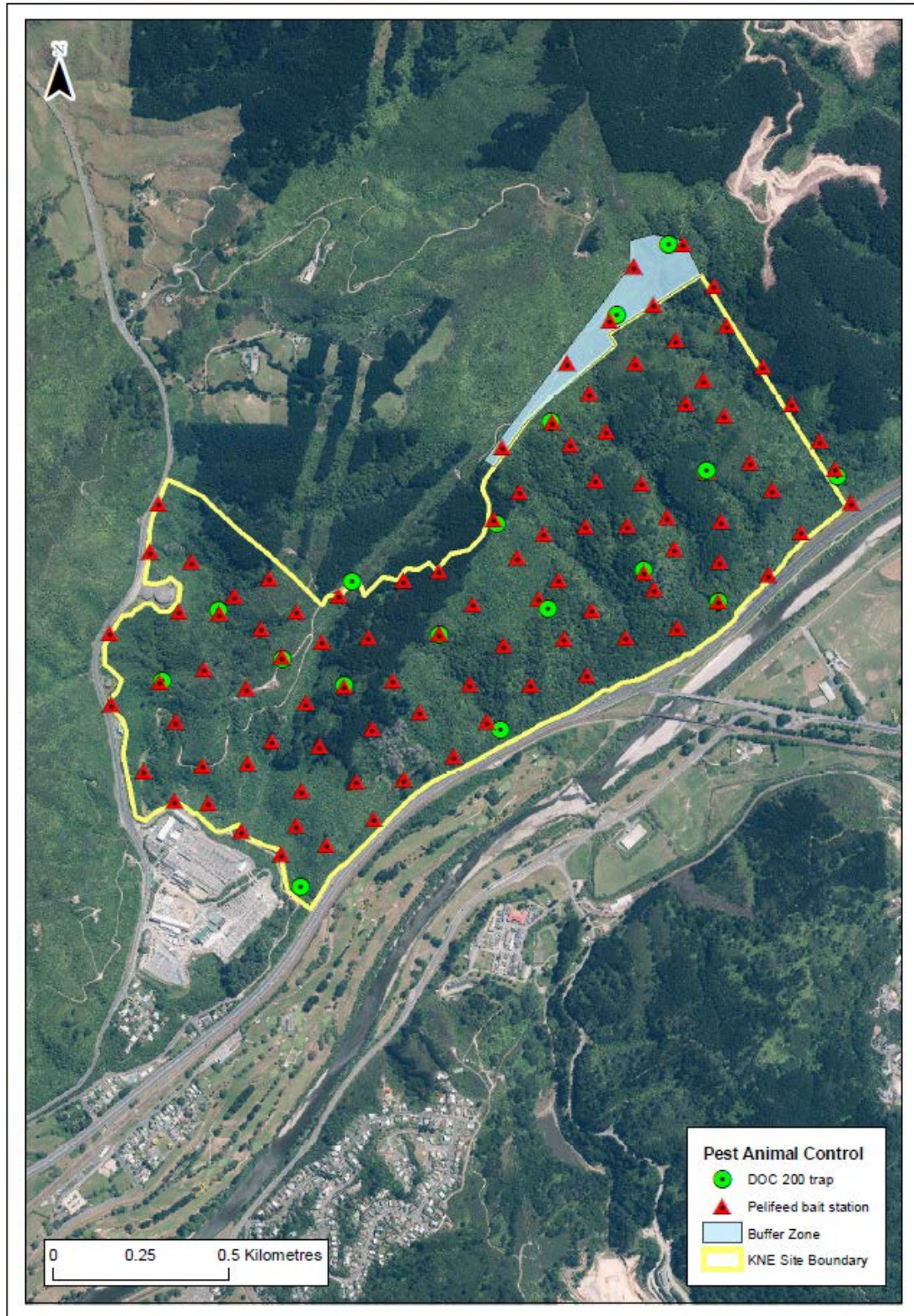
Map 3: Land Environment New Zealand threat classification map for the Keith George Memorial Park KNE site (LENZ copyright Ministry for the Environment/Landcare Research).





Map 4: Operational areas in the Keith George Memorial Park KNE site.





Map 5: Pest animal control in the Keith George Memorial Park KNE site and buffer area.

## 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 cycle<sup>15</sup> with the exception of birds that are assessed on a five-year cycle<sup>16</sup>. 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 Keith George Memorial Park KNE site.

**Table 5: Threatened and At Risk species recorded in the Keith George Memorial Park KNE site.**

Scientific name	Common name	Threat status	Observation
<b>Plants(vascular)<sup>17</sup></b>			
<i>Peraxilla tetrapetala</i>	Red Mistletoe	At Risk–Declining	New Zealand Plant Conservation Network online database <sup>18</sup>
<i>Solanum aviculare</i> var. <i>aviculare</i>	Poroporo	At Risk–Declining	Wassilieff et al. 1986 <sup>19</sup>
<b>Birds<sup>20</sup></b>			
<i>Cyanoramphus novaezelandiae</i>	Red-crowned parakeet	At Risk–Relict	McArthur et al. 2012
<i>Falco novaeseelandiae</i>	New Zealand falcon	Threatened – nationally vulnerable	McArthur et al. 2012 <sup>21</sup>

## Appendix 3: Ecological weed species

Ecological weeds in order of control priority in Operational Area B.

**Table 7: Ecological weed species recorded in the Keith George Memorial Park KNE site.**

Scientific Name	Common Name	Priority
<i>Buddleja davidii</i>	Buddleia	1
<i>Clematis vitalba</i>	Old man's beard	1
<i>Convolvulus arvensis</i>	Bindweed	1
<i>Cotoneaster</i> sp.	Cotoneaster	1
<i>Crataegus monogyna</i>	Hawthorn	1
<i>Crocsmia</i> × <i>crocsmiiflora</i>	Montbretia	1
<i>Cytisus scoparius</i>	Broom	1
<i>Delairea odorata</i> (syn. <i>Senecio mikanioides</i> )	German ivy	1
<i>Hypericum androsaemum</i>	Tutsan	1
<i>Lonicera japonica</i>	Japanese honeysuckle	1
<i>Paraserianthes lophantha</i>	Brush wattle	1
<i>Passiflora</i> spp.	Banana passionfruit	1
<i>Pinus radiata</i>	Radiata pine	1
<i>Populus alba</i>	White poplar	1
<i>Rubus fruticosus</i> agg.	Blackberry	1
<i>Rumex sagittatus</i>	Climbing dock	1
<i>Salix</i> sp.	Willow	1
<i>Selaginella kraussiana</i>	Selaginella	1
<i>Senecio angulatus</i>	Cape ivy	1
<i>Tradescantia fluminensis</i>	Tradescantia	1
<i>Tropaeolum majus</i>	Nasturtium	1
<i>Vinca major</i>	Periwinkle	1
<i>Cupressus macrocarpa</i>	Macrocarpa	2
<i>Eucalyptus</i> sp.	Eucalyptus	2
<i>Ulex europaeus</i>	Gorse	3

## References

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- <sup>2</sup> McEwen MW (compiler) 1987. Ecological Regions and Districts of New Zealand. *New Zealand Biological Resources Centre Publication No. 5*. Department of Conservation, Wellington.
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