

Key Native Ecosystem Plan for Fensham

2018-2021



greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao



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1. The Key Native Ecosystem Programme

The Wellington region's native biodiversity has declined since people arrived and the ecosystems that support it face ongoing threats and pressures. Regional councils have responsibility for maintaining indigenous biodiversity, as well as protecting significant vegetation and habitats of threatened species, under the Resource Management Act 1991 (RMA).

Greater Wellington Regional Council's (Greater Wellington) Biodiversity Strategy¹ sets a framework that guides how Greater Wellington protects and manages biodiversity in the Wellington region to work towards the vision below.

Greater Wellington's vision for biodiversity

Healthy ecosystems thrive in the Wellington region and provide habitat for native biodiversity

The Strategy provides a common focus across the council's departments and guides activities relating to biodiversity. The vision is underpinned by four operating principles and three strategic goals. Of these, 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 or 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 is generally excluded from this programme.

KNE sites are managed in accordance with three-year KNE operational plans such as this one, prepared by the Greater Wellington's Biodiversity department in collaboration with the landowners, tangata whenua and other partners. These operational plans outline the ecological values, threats and management objectives for sites and describe operational activities such as ecological weed and pest animal control. KNE operational 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. Fensham Key Native Ecosystem

The Fensham KNE site is in the Mangatarere Stream catchment on the plains east of the Tararua Ranges. It is 3.5 km north-west of Carterton (See Appendix 1, Map 1). It takes its name from the Royal Forest and Bird Protection Society (F&B) reserve which makes up the majority of the KNE site. The KNE site contains 45.6 ha of primary and regenerating beech/podocarp forest and wetland areas surrounded by intensively-farmed dairy, drystock and arable land, forestry and lifestyle blocks.

3. Landowners and stakeholders

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

3.1 Landowners

The main landowner of Fensham KNE site is F&B who own 40 ha, of which 9 ha is primary forest, 3 ha is wetlands and 28 ha is regenerating forest. The history of the reserve began in 1943 when 55 ha of forest and pastoral land was gifted to F&B in John Fensham's will. It stipulated that the 9 ha of primary forest be preserved and the reserve be named after him. The remaining pastoral land was to be leased for grazing to support his four sisters and in 1978 the land was passed to F&B. Two further parcels of land on the southeastern boundary were gifted by neighbouring landowners to F&B in 2013.

The remaining 10.8 ha of the KNE site is owned by Aidan Bichan/Zabell Farms Ltd and Graeme Bell. These areas are contiguous with and extend out from the F&B reserve into surrounding farmland and all are fenced and retired from grazing. Refer to Appendix 1, Map 2 for landowner boundaries.

Aidan Bichan of Zabell Farms Ltd is fully supportive of the plan and is already carrying out their own programme of weed and animal pest control and revegetation, based on a management plan drafted in 2015.

Graeme Bell's property contains remnant and regenerating forest on the boundary with the F&B reserve. He is supportive of the KNE plan.

3.2 Management partners and key stakeholders

Fensham KNE site's primary management partner is a volunteer sub-group of the Wairarapa branch of F&B known as the Fensham Group. This group coordinates and runs restoration and maintenance activities within the reserve in accordance with a management plan written in 2000², (with a review done in 2009 and an operational plan developed in 2011). This KNE operational plan is well-aligned with the objectives and activities around protection, restoration and land use in these documents.

QEII National Trust is a management partner at this KNE site because there are QEII open space covenants on the Zabell Farms Ltd property. A MOU³ signed by Greater Wellington and the QEII National Trust in 2017 outlines how the two parties will work together to protect and enhance the region's biodiversity.

The primary management partners within Greater Wellington are the Biodiversity department, which coordinates biodiversity advice and management activities, and the Biosecurity department, which coordinates and delivers pest control work at the site in conjunction with F&B volunteers.

Greater Wellington's Land Management department plays a role in the surrounding Mangatarere Stream catchment area, working with around 30 farms as part of the Farm Environment Plan⁴ programme. Riparian fencing and planting works were carried out in 2013-14 on several nearby farms as part of the programme. This project will in time improve water quality and increase habitat connectivity for the Fensham KNE site and surrounding areas.

The Carrington Water Race runs through two of the properties in the northwest and is administered by Carterton District Council (CDC).

4. Ecological values

This section describes the ecological components and attributes that contribute to making the KNE site important. These factors help determine the site's value at a regional scale and how managing it contributes to 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.

Fensham KNE site is in the Wairarapa Plains Ecological District⁵, but due to its proximity to the Tararua Ecological District it has some mixed ecological characteristics.

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

Threatened ecosystems: The Threatened Environment Classification classifies land in the KNE site in the two highest threat categories; Acutely Threatened and Chronically Threatened⁶. This means there is less than 10% or 10-20%, respectively, of original cover of indigenous vegetation remaining on these types of land in New Zealand⁷.

Threatened species: Fensham KNE site contains one Nationally-Threatened native fish and two Regionally-Threatened native plants. See Appendix 2 and 3.

The Singers and Rogers (2014)⁸ ecosystem classification indicates the Fensham KNE site mainly contained black beech forest (MF5), with small areas of kahikatea –

pukatea forest (WF8) and tōtara – tītoki forest (MF1). There is 46%, 1%, and 2%, respectively, of these forest types remaining in the Wellington region making WF8 and MF1 regionally threatened ecosystems⁹. Modified examples of all three forest types are still present today.

The regionally-threatened¹⁰ fine-leaved parsley fern/pātōtara (*Botrychium bifforme*) and swamp willow herb (*Epilobium pallidiflorum*) are present. Other plants present that are uncommon in the ecological district include swamp maire (*Syzygium maire*), rimu (*Dacrydium cupressinum*), red beech/tāwhairāunui (*Nothofagus fusca*), rōhutu (*Lophomyrtus obcordata*), ramarama (*Lophomyrtus bullata*) and small-leaved milk tree/tūrepo (*Streblus heterophyllus*)¹¹.

Two species of mistletoe have been translocated to the F&B reserve and are still present, having likely occurred here naturally in the past: yellow-flowered mistletoe (*Alepis flavida*) which is in decline nationally and planted here in 2012, and green or small-flowered mistletoe (*Ileostylus micranthus*) which is in gradual decline in the region and planted here in 2009¹².

The two areas of wetland in Fensham Reserve are ranked as 'Significant' under Greater Wellington's proposed Natural Resources Plan 2015¹³. These wetlands are home to the endemic brown mudfish/waikaka (*Neochanna apoda*)¹⁴ with a threat status of At Risk - Declining¹⁵.

Native birdlife includes New Zealand kingfisher/kotare (*Todiramphus sanctus*), pied stilt (*Himantopus himantopus leucocephalus*) New Zealand pigeon/kererū (*Hemiphagus novaeseelandiae*), tūī (*Prothemadera novaeseelandiae*), bellbird (*Anthornis melanura*), fantail (*Rhipidura fuliginosa*), grey warbler (*Gerygone igata*), morepork (*Ninox novaeseelandiae*), silvereye (*Zosterops lateralis*) and shining cuckoo (*Chrysococcyx lucidus*)¹⁶.

Reptiles observed include forest or Ngahere gecko (*Mokopirirakau* 'southern North Island'; threat status At Risk – Declining), copper skink (*Oligosoma aeneum*; not threatened) and Raukawa gecko (*Woodworthia maculata*; not threatened)^{17, 18}.

Key threats to ecological values at the site

Ecological values can be threatened by human activities, and by introduced animals and plants that change 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.

The main threats to the ecological values of Fensham KNE site are ecological weeds and introduced predators and browsers. Old man's beard (*Clematis vitalba*), English ivy (*Hedera helix*) and Japanese honeysuckle (*Lonicera japonica*) are the most ecologically-damaging pest plants found in this KNE site.

Pest animals are present throughout the KNE site and are known to damage native vegetation and prey on native animals. Pest animals known to be present include possums (*Trichosurus vulpecula*), mustelids (*Mustela* spp.), Ship and Norway rats (*Rattus rattus* and *R. norvegicus*), mice (*Mus musculus*), hedgehogs (*Erinaceus europaeus*), feral cats (*Felis catus*) and rabbits (*Oryctolagus cuniculus*).

The Carrington Water Race system runs through the northwest of the KNE site, and is an important feature of the site with a long history (at least 100 years) supplying

surface and groundwater to the area of forest it runs through. Water quality in the races is generally dependent on surrounding land use, but due to their long history native biota has adapted to them and they may be expected to provide valuable habitat as well as soil moisture¹⁹. Although its resource consent was renewed in 2012, any maintenance works on the water race system undertaken by CDC may impact on the ecological values of the site. Provisions to manage any related works are covered in the new consent.

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 each 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 Fensham KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area
Ecological weeds		
EW-1	Woody weeds compete with and can displace native plant species in regenerating and mature forest. Key species include: gorse (<i>Ulex europaeus</i>), wilding conifers (<i>Pinus</i> spp. and <i>Cupressus macrocarpa</i>), holly (<i>Ilex aquifolium</i>), hawthorn (<i>Crataegus monogyna</i>), common barberry (<i>Berberis glaucocarpa</i>), cotoneaster (<i>Cotoneaster glaucophyllus</i>), Spanish heath (<i>Erica lusitanica</i>), elaeagnus (<i>Elaeagnus reflexa</i>) and elderberry (<i>Sambucus nigra</i>).	Entire KNE site
EW-2	Climbing weeds smother native vegetation and prevent natural regeneration of native plants. They reduce the area of habitat and amount of food available for native wildlife. Key species include: old man's beard, Japanese honeysuckle and English ivy. Note: fruiting English ivy is highly attractive to exotic wasps (<i>Vespula</i> spp.).	Entire KNE site
EW-3	Ground cover can smother native vegetation and prevent native regeneration. Key species include: tradescantia (<i>Tradescantia fluminensis</i>) and perennial nettle (<i>Urtica dioica</i>).	Entire KNE site
Pest animals		
PA-1	Possoms browse palatable canopy vegetation until it can no longer recover ^{20,21} . This destroys the forest's structure, diversity and function. Possoms may also prey on native birds ²² and invertebrates.	Entire KNE site
PA-2	Mustelids (stoats ^{23,24} (<i>Mustela erminea</i>), ferrets ^{25,26} (<i>M. furo</i>) and weasels ^{27,28} (<i>M. nivalis</i>)) prey on native birds, lizards and invertebrates, reducing their breeding success and potentially causing local extinctions.	Entire KNE site
PA-3	Feral, stray and domestic* cats prey on native birds ²⁹ , lizards ³⁰ and invertebrates ³¹ , reducing native fauna breeding success and potentially causing local extinctions ³² .	Entire KNE site
PA-4	Rats browse native fruit, seeds and vegetation. They compete with native fauna for food and can reduce forest regeneration. They also prey on invertebrates, lizards and native birds ^{33,34} .	Entire KNE site
PA-5*	House mice 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 ^{35,36} .	Entire KNE site
PA-6	Hedgehogs prey on native invertebrates ³⁷ , lizards ³⁸ and the eggs ³⁹ and chicks of ground-nesting birds ⁴⁰ .	Entire KNE site
PA-7*	Rabbits and hares (<i>Lepus europaeus</i>) graze on palatable native vegetation and prevent natural regeneration in some environments ⁴¹ . Hares especially will penetrate into wetland and forest areas browsing and reducing regeneration of native seedlings.	Entire KNE site
PA-8*	Wasps (<i>Vespula</i> spp.) adversely impact native invertebrates and birds through predation and competition for food resources.	Entire KNE site
Human activities		
HA-1*	Agricultural practices, particularly grazing livestock can result in pugging soils, grazing inhibiting regeneration, wildlife disturbance and increasing nutrient content of soils and watercourses ⁴² .	KNE site edges
HA-2*	Fires caused by deliberate acts and uncontrolled campfires can quickly spread and burn large areas of vegetation and threaten buildings and assets.	Entire KNE site

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

5. 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 Fensham KNE site:

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

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

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

6. 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.

6.1 Pest animal control

Pest animal control is critical to protecting the values present and achieving the management objective for this KNE site. A multi-species approach to animal pest control⁴³ is currently in place (see Appendix 1, Map 4) using a range of management methods.

Within the KNE site, the F&B Fensham group of volunteers services 45 Sentry bait stations on a monthly basis for the control of possums and rodents, with bait supplied by Greater Wellington.

The Greater Wellington Biosecurity department services 16 DOC250 and Timms trap locations on a monthly basis, targeting mustelids and feral cats.

Aidan Bichan of Zabell Farms Ltd has several bait stations and traps on his property (included in Map 4) that are regularly serviced, with bait supplied by Greater Wellington.

Possum numbers are likely to be low across the landscape following the completion of TBFree NZ control work in the area in 2015⁴⁴.

6.2 Ecological weed control

The aim of ecological weed control undertaken at the KNE site is to limit the impact of exotic species, maintaining the native biodiversity values and facilitating more natural functioning of the native ecosystem. As is often the case, the interior of the KNE site has low densities of pest plants and most weed infestations are located on the edges.

The Fensham Group carries out regular surveillance and control of high priority species in the F&B reserve and is also felling mature pines for firewood and controlling gorse, holly and other weed species in the recently gifted land parcel. The houses on the eastern boundary of the KNE site have multiple ecological weed species such as old man's beard, tradescantia and elaeagnus. The Fensham Group will work to control any incursions into the KNE site in this area and work with the landowners on buffer control, with advice from Greater Wellington if required.

Surveillance and control of high priority weeds such as old man's beard and wilding pines will also be carried out annually across the three years of this plan by Greater Wellington. If required, Greater Wellington will assist the Fensham Group to control gorse in certain areas (prior to revegetation), holly, wilding pines and any other high priority species found during the three years of the KNE plan.

Aidan Bichan of Zabell Farms Ltd carries out regular weed control work on his property with support from QEII, targeting species such as old man's beard and wilding pines. Old man's beard control work may be assisted by Greater Wellington as resources allow.

A neighbouring property on the southeast has significant infestations of tradescantia and in 2012 and 2013 two species of exotic beetle were released as bio-control agents with the aim of reducing its density and rate of spread. These sites will be left intact and monitored by Greater Wellington Biosecurity outside of this KNE plan. If the tradescantia spreads into the KNE site it will be controlled by either F&B or Greater Wellington.

6.3 Revegetation

The Fensham Group has a restoration and development programme as part of their Fensham Reserve Management Plan (2000). They have identified various areas of surrounding pasture that will be retired from grazing and replanted with natives (including the block gifted in 2013). Plants are grown by F&B and a nearby nursery from eco-sourced seeds and planted each winter. They also want to continue the reintroduction of rare or threatened native plant species.

The block recently gifted to F&B along with riparian areas on the northwestern and southeastern edges of the KNE site will be the focus for F&B's restoration efforts in the coming years⁴⁵, and Greater Wellington will support the planning of this work if required. Other previously-planted areas such as the wetlands in the north will be infilled with new and replacement plants by F&B.

Aidan Bichan of Zabell Farms Ltd and QEII are planting several areas of his property with natives, including the area of natural wetland on the eastern edge and a reconstructed wetland on the western edge of the property.

6.4 Small mammal monitoring

The Fensham Group undertakes small mammal monitoring (quarterly for rodents and six-monthly for mustelids/hedgehogs) in the KNE site. The Tracking Tunnel Index (TTI) method is used to monitor the presence of small mammal species. The results of this monitoring will provide an indication of the effectiveness of the pest animal control

network. Greater Wellington Environmental Science department funds and assists the Fensham Group with this activity.

6.5 Fire risk

Aidan Bichan has installed an approved fire pond on the edge of the constructed wetland area on his property. All maintenance and use will be the responsibility of the landowner.

6.6 Lizard monitoring

Following the survey in 2017, longer term monitoring is being undertaken by Greater Wellington Environmental Science department to try and detect Kupe skink (*Oligosoma* aff. *infrapunctatum* 'southern North Island') and barking gecko (*Naultinus punctatus*) which have been recorded previously in this area (1970 and 1996 respectively).

7. Operational Plan

The operational plan shows the actions planned to achieve the stated objectives for Fensham KNE and their timing and cost over the three-year period from 1 July 2018 to 30 June 2021. The budget for the 2019/20 and 2020/21 years is indicative only and subject to change.

Table 2: Three year operational plan for Fensham KNE site

Objective	Threat	Activity	Operational area	Delivery	Description/detail	Target	Timetable and resourcing		
							2018/19	2019/20	2020/21
1	EW-1, 2, 3	Ecological weed control	F&B reserve	Fensham Group	Control of groundcover, climbing and woody weeds	Priority species are controlled wherever found	Nil*	Nil*	Nil*
1	EW-1, 2, 3	Ecological weed control	Entire KNE site	GWRC Biosecurity	Control of groundcover, climbing and woody weeds	Priority species are controlled wherever found	\$1,500	\$1,500	\$1,500
1, 2	PA-1, 2, 3, 4	Pest animal control	F&B reserve	Fensham Group GWRC Biosecurity	Service bait stations monthly	Possums <5% RTC** Rats <10% TTI***	Nil*	Nil*	Nil*
					Supply bait	Bait supplied on request	\$100	\$100	\$100
1, 2	PA-1, 2, 3, 4, 6	Pest animal control	F&B reserve	GWRC Biosecurity	Service kill-traps monthly	Mustelids, feral cats and hedgehogs are controlled as per best practise	\$3,800	\$3,800	\$3,800
1, 2	PA-1, 2, 3, 4, 6	Pest animal control	Bichan block	Fensham Group GWRC Biosecurity	Service bait stations and kill-traps monthly	Possums <5% RTC** Rats <10% TTI***	Nil*	Nil*	Nil*
					Supply bait	Bait supplied on request	\$100	\$100	\$100
1	PA-1, 2, 3, 4, 6	Small mammal monitoring	F&B reserve	Fensham Group GWRC Environmental Science	Quarterly for rodents and six-monthly for mustelids/hedgehogs	Rats <10% TTI***	Nil*	Nil*	Nil*
1	EW-1, 2 and 3	Revegetation	F&B reserve	Fensham Group	Revegetation works as per landowner's management plans	Planting done to best practise	Nil*	Nil*	Nil*
						Total	\$5,500	\$5,500	\$5,500

* Fieldwork costs incurred by the Fensham Group. Tracking cards and analysis funded by Greater Wellington Environmental Science department

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

***TTI = Tracking Tunnel Index. The control regime has been created to control rats to this management target but monitoring will not be undertaken. Experience in the use of this control method in similar situations indicates this target will be met⁴⁶

8. Funding summary

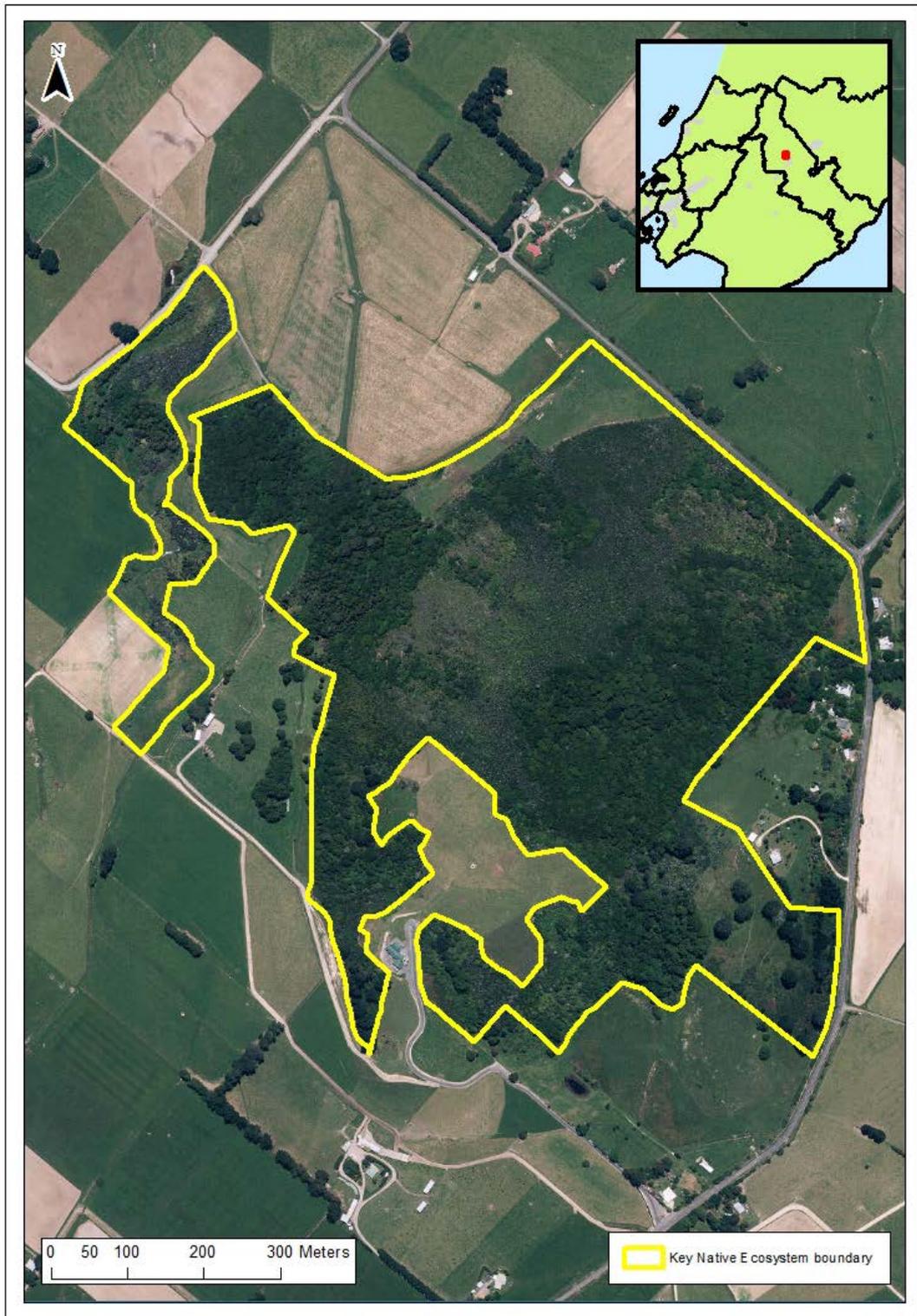
8.1 Greater Wellington budget

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

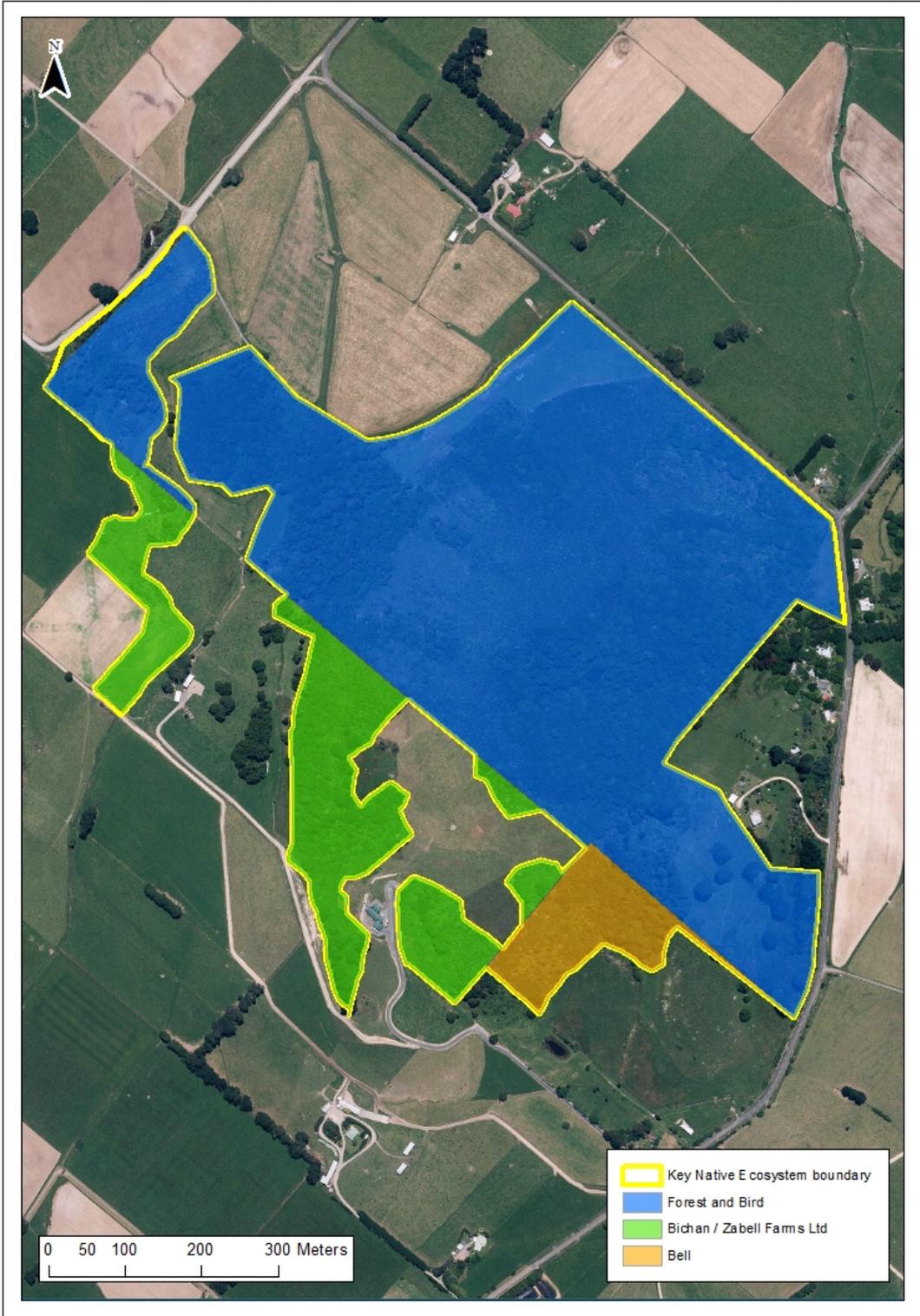
Table 3: Greater Wellington allocated budget for the Fensham KNE site

Management activity	Timetable & Resourcing		
	2018/19	2019/20	2020/21
Ecological weed control	\$1,500	\$1,500	\$1,500
Pest animal control	\$4,000	\$4,000	\$4,000
Total	\$5,500	\$5,500	\$5,500

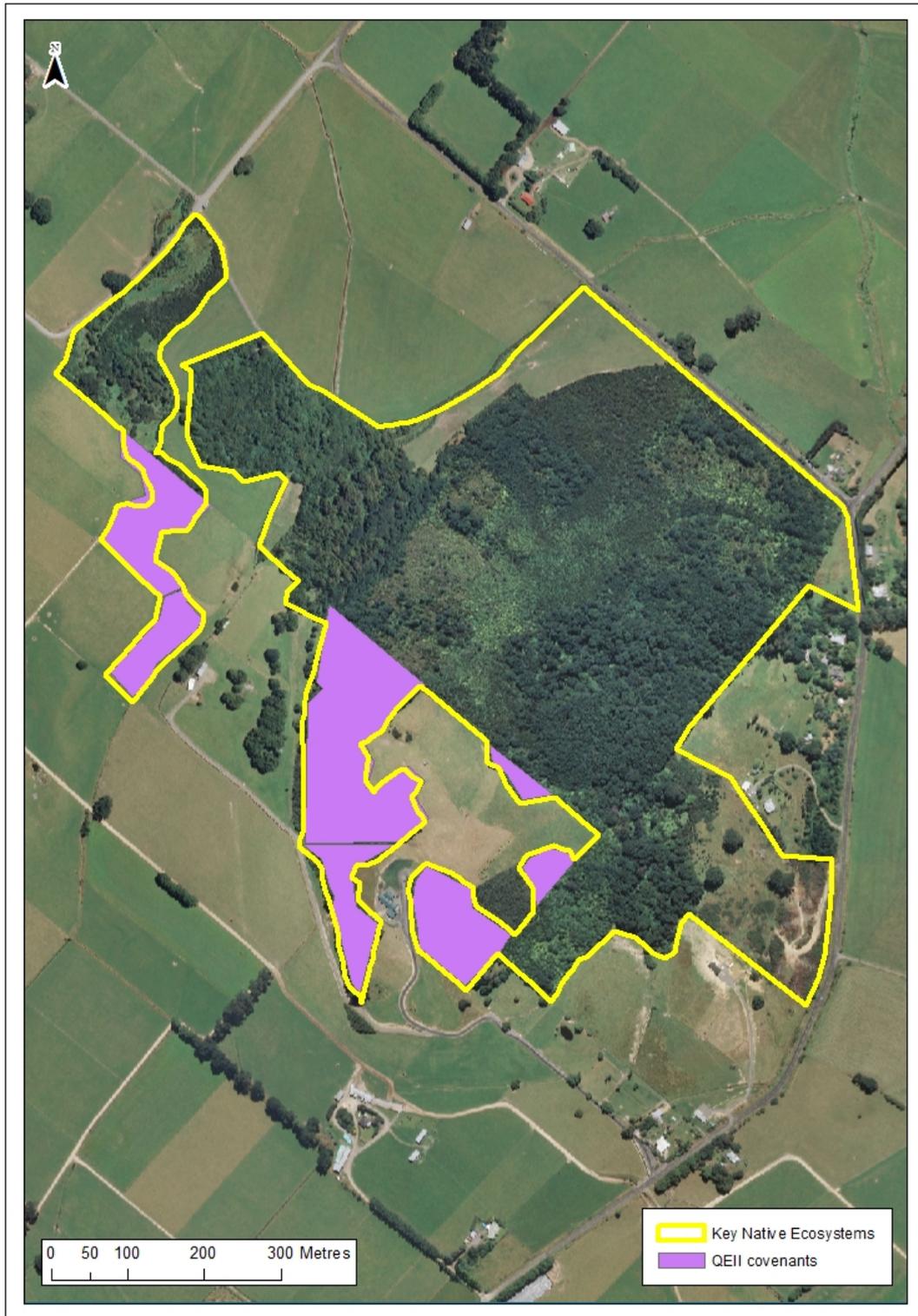
Appendix 1: Site Maps



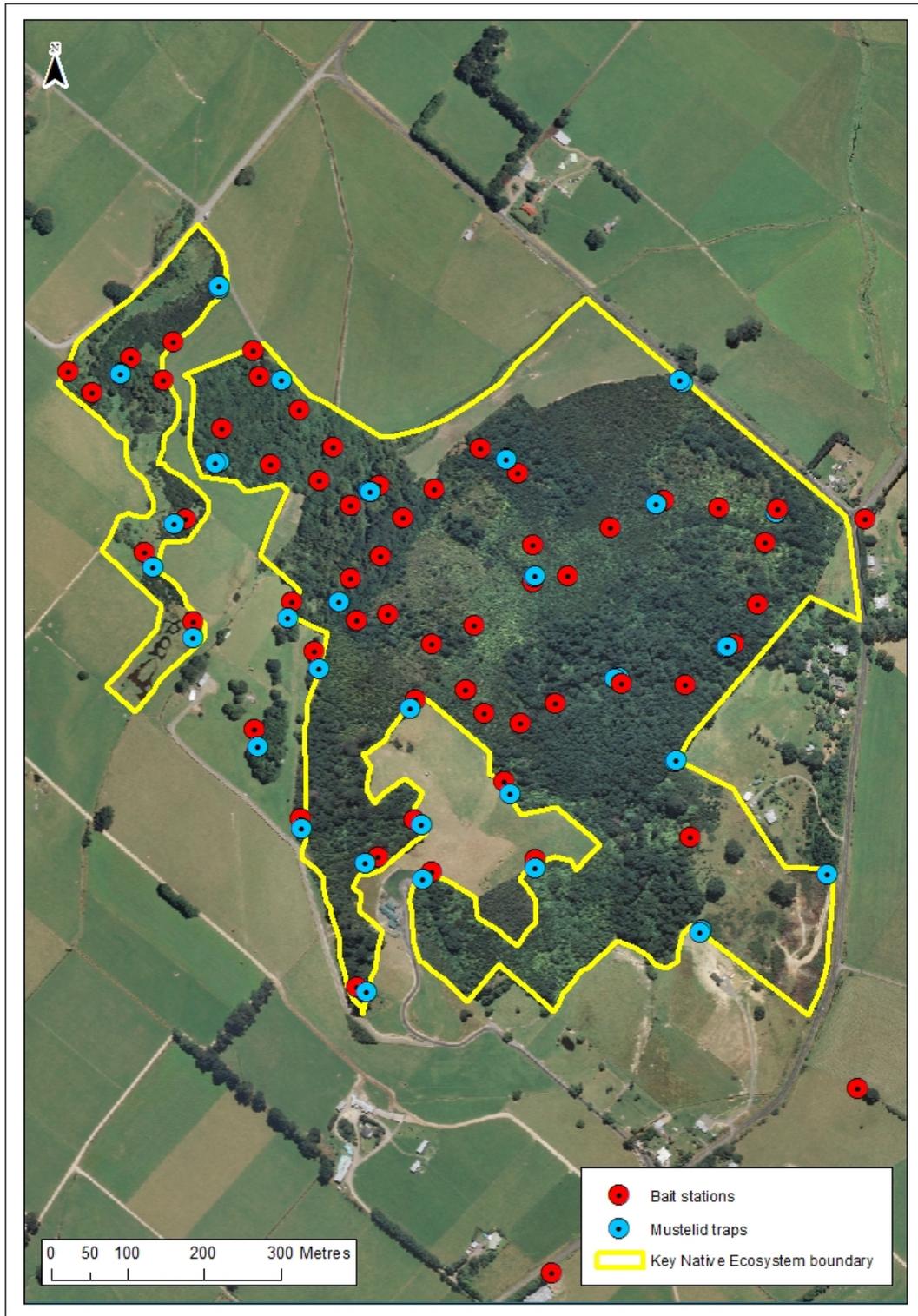
Map 1: The Fensham KNE site boundary



Map 2: Land ownership at the Fensham KNE site



Map 3: Areas of the Fensham KNE site that are protected with QEII National Trust open space covenants



Map 4: Pest animal control network at the Fensham 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 five-year cycle⁴⁷. 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 known to live within the KNE site.

Table 4: Nationally Threatened and At Risk species at the Fensham KNE site

Scientific name	Common name	Threat status	Observation
Plants(vascular)⁴⁸			
<i>Alepis flavida</i>	Yellow-flowered mistletoe	At Risk – Declining	Thompson, T. pers. comm 2013, 2015 ⁴⁹
Freshwater fish⁵⁰			
<i>Neochanna apoda</i>	Waikaka; brown mudfish	At Risk – Declining	White, 2000. F&B Management Plan ¹
Reptiles⁵¹			
<i>Mokopirirakau</i> 'southern North Island'	Ngahere gecko	At Risk – Declining	Bell, T. 2017 ⁵²

Appendix 3: Regionally threatened species list

The following table lists regionally threatened species that have been recorded in the KNE site. Threatened native plant species have been identified in the Plant Conservation Strategy, Wellington Conservancy 2004-2010⁵³.

Table 5: Regionally Threatened and At Risk species at the Fensham KNE site

Scientific name	Common name	Threat status	Observation
Plants (vascular) ⁵⁴			
<i>Botrychium bifforme</i>	Pātōtara; fine-leaved parsley fern	Gradual Decline	White, 2000. F&B Management Plan
<i>Epilobium pallidiflorum</i>	Swamp willow herb	Sparse	White, 2000. F&B Management Plan
<i>Ileostylus micranthus</i>	Pirita; green or small-leaved mistletoe	Gradual Decline	Thompson, T. pers. comm 2013, 2015

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