

# Key Native Ecosystem Operational Plan for Trentham Memorial Park

2021-2026





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## 1. Purpose

The purpose of the five-year Key Native Ecosystem (KNE) Operational Plan for Trentham Memorial Park KNE site is to:

- Identify the parties involved
- Summarise the ecological values and identify the threats to those values
- Outline the objectives to improve ecological condition
- Describe operational activities (eg, ecological weed control) that will be undertaken, who will undertake the activities and the allocated budget

KNE Operational Plans are reviewed every five years to ensure the activities undertaken to protect and restore the KNE site are informed by experience and improved knowledge about the site.

This KNE Operational Plan is aligned to key policy documents that are outlined below (in Section 2).

## 2. Policy Context

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)<sup>1</sup>.

Plans and Strategies that guide the delivery of the KNE Programme are:

### **Greater Wellington Long Term Plan**

The Long Term Plan (2018-2028)<sup>2</sup> outlines the long term direction of the Greater Wellington Regional Council (Greater Wellington) and includes information on all our major projects, activities and programmes for the next 10 years and how they will be paid for. This document outlines that Greater Wellington will actively manage selected high value biodiversity sites. Most of this work is undertaken as part of the KNE programme.

### **Proposed Natural Resources Plan**

The Proposed Natural Resources Plan for the Wellington Region (PNRP)<sup>3</sup> provides the high level strategic framework which sets out how Greater Wellington, Mana whenua partners and the community work together and includes:

- Guiding Principles that underpin the overall management approach of the plan (eg, Kaitiakitanga)
- Sites with significant indigenous biodiversity values
- Sites of significance to mana whenua (refer Schedules B, C, Schedule D)

### Greater Wellington Biodiversity Strategy

The Greater Wellington Biodiversity Strategy<sup>4</sup> (the Strategy) is an internal document that sets a framework that guides how Greater Wellington protects and manages biodiversity in the Wellington region to work towards the Vision.

**Vision**

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

The Strategy provides a common focus across Greater Wellington’s departments and guides activities relating to biodiversity. The Vision is underpinned by four operating principles and three strategic goals. Goal One drives the delivery of the KNE Programme.

**Goal One**

Areas of high biodiversity value are protected or restored

### 3. The Key Native Ecosystem Programme

The KNE Programme is a non-regulatory programme. The programme seeks to protect some of the best examples of original (pre-human) ecosystem types in the Wellington region. Sites with the highest biodiversity values have been identified and prioritised for management.

KNE sites are managed in accordance with five-year KNE plans prepared by Greater Wellington’s Biodiversity department. Greater Wellington works with the landowners, mana whenua and other operational delivery providers to achieve mutually beneficial goals.

KNE sites can be located on private or publicly owned land. Any work undertaken on private land as part of this programme, it is at the discretion of landowners, and their involvement in the programme is entirely voluntary. Involvement may just mean allowing work to be undertaken on that land. Land managed by the Department of Conservation (DOC) is generally excluded from this programme.

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.

#### **4. Trentham Memorial Park Key Native Ecosystem site**

The Trentham Memorial Park KNE site (15.3 ha) is located within the larger Trentham Memorial Park Recreation Reserve, Upper Hutt (see Appendix 1, Map 1). The KNE site comprises two areas of lowland podocarp/broadleaf forest, known as Barton’s Bush and Domain Bush, a section of the Moehau Stream adjacent to Barton’s Bush, which is actively being restored and a recently planted area bordering Barton’s Bush.

The KNE site is representative of the forest that once dominated the lower terraces of the Hutt River valley, and Barton’s Bush is the largest remaining area of lowland mixed podocarp/broadleaf forest on the Hutt Valley floor<sup>5</sup>. The KNE site supports a number of threatened plant, bird and fish species and is part of a series of bush reserves within the Hutt Valley that are considered important foraging and breeding sites for native forest bird species.

## 5. Parties involved

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

### 5.1. Landowner/Land Manager

Trentham Memorial Park KNE site is located on land owned and administered as a Recreation Reserve by Upper Hutt City Council (UHCC) in keeping with the Council's Long Term Plan 2012-2022<sup>6</sup>. This plan aims to provide high quality parks and reserves that provide a range of passive and active leisure opportunities for the city's residents, as well as providing areas and associated facilities that contribute to a fun leisure destination image for the city.

### 5.2. Operational delivery

UHCC, Greater Wellington and the Upper Hutt branch of the Royal Forest and Bird Protection Society (UHF&B) are the key management partners and have worked collaboratively to manage the KNE site's pest control and restoration operations for a number of years.

UHCC have owned the land since 1950 and fenced off the forest remnants from public access in 1995 to prevent damage by recreational users. UHCC are responsible for track and fence maintenance and support UHF&B to undertake management activities in the KNE site. They also undertake additional ecological weed control and fund additional pest animal control (eg, rabbit control) and planting as and when required. UHCC will be the primary contact for UHF&B supporting their restoration planting and undertaking ecological weed control.

Greater Wellington's primary focus at the KNE site is ongoing ecological weed control and pest animal control in Barton's Bush and Domain Bush. Greater Wellington will also continue to support UHF&B at the Moehau Stream Restoration Project primarily with ecological weed control.

Within Greater Wellington, the Biodiversity and Biosecurity departments are responsible for delivering the KNE operational plan.

- The Biodiversity department is the overarching lead department for Greater Wellington on the longer term planning and coordination of biodiversity management activities and advice within the KNE site. The Biodiversity department's KNE budget funds the Biosecurity department to coordinate and carry out pest control activities.
- The Biosecurity department coordinates and implements pest controls measures and provides training/support to the UHF&B volunteers that service the pest animal network at the KNE site.

UHF&B have been working at the site since 1995. They regularly undertake restoration planting and associated weed control in Moehau Stream as part of the Moehau Stream Restoration Project. They also undertake additional infill planting and weed control within Barton's and Domain Bush, and have recently planted a large area adjacent to

Barton's Bush with UHCC support. They grow and supply their own plants for the plantings. UHF&B also service the trap and bait station network within the KNE site.

### **5.3. Mana whenua partners**

The Hutt River (Te Awa Kairangi) and its tributaries (including the KNE site) are identified as a Statutory Acknowledgement Area for Ngāti Toa Rangatira (Ngāti Toa) according to Schedule D2 of the PNRP<sup>7</sup>. Ngāti Toa have a strong historical connection with the Hutt River and its tributaries, and the iwi consider that the river is included within their extended rohe and it is an important symbol of their interests in the Heretaunga area. Ngāti Toa are aware that their area of interest is located on territorial authority land. Greater Wellington will provide key contact details for UHCC to Ngāti Toa if they wish to consult directly with them about the values at the site. The adjacent Hutt River (Te Awa Kairangi) is also a Statutory Acknowledgement Area for Taranaki Whānui ki Te Upoko o Te Ika (Taranaki Whanui). More information can be found in Schedule D1 of the PNRP<sup>8</sup>.

## 6. 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.

### 6.1. Ecological designations

Table 1 below lists ecological designations at all or part of the Trentham Memorial Park KNE site.

**Table 1: Designations at the Trentham Memorial Park KNE site**

Designation level	Type of designation
District	<p>Trentham Memorial Park KNE site is identified as a Recreation Reserve under the Reserves Act 1977</p> <p>The majority of the KNE site has been identified by DOC as a Designated Ecological Site:</p> <ul style="list-style-type: none"> <li>• Trentham Memorial Park Bush (1247)</li> </ul>
Other	<p>The Trentham Memorial Park KNE site is scheduled under the PNRP as a Statutory Acknowledgement Area for Ngāti Toa:</p> <ul style="list-style-type: none"> <li>• Hutt River and its tributaries (Schedule D2)</li> </ul> <p>The adjacent Hutt River is also scheduled under the PNRP as a Statutory Acknowledgement Area for Taranaki Whānui (Schedule D1).</p>

### 6.2. Ecological significance

The Trentham Memorial Park 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 contains a variety of inter-connected habitats and, provides core/seasonal habitat for threatened indigenous species within the KNE site

#### *Representativeness*

The Threatened Environment Classification system<sup>9</sup> indicates that the entirety of the KNE site consists of habitat that is Acutely Threatened having less than 10% of the original cover of indigenous vegetation remaining<sup>10</sup>.

The Singers and Rogers<sup>11</sup> classification of pre-human vegetation indicates the KNE site was dominated by tawa, kāmahī, podocarp forest (MF7). The KNE site is still representative of this original forest type, which is estimated to have only 22% of its original extent remaining in the Wellington Region<sup>12</sup>. The KNE site is the only remaining significant remnant of lowland forest in the Hutt Valley, representing 0.14% of the original Hutt Valley vegetation cover<sup>13</sup>.

### *Rarity/distinctiveness*

New Zealand's national threat classification system<sup>14</sup> lists two plant species and two bird species as nationally At Risk within the KNE site. Four plant species, 2 bird species and 1 reptile present have also been listed as regionally threatened. Nationally threatened species are listed in Appendix 2 and regionally threatened species in Appendix 3.

### *Ecological context*

The KNE site has a high diversity of plant species and is thought to be an important bush reserve for native birds within a network of other reserves (eg, Trentham Scenic Reserve, Keith George Memorial Park KNE site and Wi Tako Ngatata KNE site) within the Hutt Valley. Combined, these sites are likely to form an important network for bird species to disperse and forage throughout the Hutt Valley.

## **6.3. Ecological features**

The KNE site is situated on the flat Hutt River terrace and is located within the Wellington Ecological District<sup>15</sup>, with a mild but windy climate and annual rainfall of 900-1400 mm. The KNE site is surrounded by playing fields and recreational areas that comprise Trentham Memorial Park as well as residential properties on Holdsworth Avenue at the northern end of Barton's Bush.

### **Vegetation communities**

The KNE site is representative of the forest that once dominated the lower terraces of the Hutt River valley, and Barton's Bush is the largest remaining area of lowland mixed podocarp/broadleaf forest on the Hutt Valley floor<sup>16</sup>. Over 100 plant species have been recorded in the bush remnants<sup>17</sup>. The largest kahikatea in the Wellington Region can be found close to Domain Bush<sup>18</sup>. The nationally At-Risk and regionally critical taapia/white mistletoe (*Tupeia antarctica*), as well as the nationally At-Risk and regionally vulnerable *Teucrium parvifolium*, regionally vulnerable *Diplazium australe*, and the regionally uncommon piritā/green mistletoe (*Ileostylus micranthus*) are present<sup>19</sup>.

The management activities that have been undertaken since 1998 and have proved successful with clear improvement of the canopy and understory within Barton's Bush and Domain Bush. Additional benefits have included providing better foraging and nesting opportunities for native birds and the success of the restoration project along the Moehau Stream.

Barton's Bush, the larger of the two forest remnants, was named after Richard Barton, an early settler who wished to see the native forest protected. Barton's Bush (10.1 ha) contains emergent native matai (*Prumnopitys taxifolia*), tōtara (*Podocarpus totara*) and pukatea (*Laurelia novae-zelandiae*), over a canopy of predominantly tawa (*Beilschmiedia tawa*) with kahikatea (*Dacrycarpus dacrydioides*), tītoki (*Alectryon excelsus*), manatu/ribbonwood (*Plagianthus regius* subsp. *regius*), karaka (*Corynocarpus laevigatus*) and miro (*Prumnopitys ferruginea*)<sup>20</sup>. The middle storey is comprised of māhoe (*Melicactus ramiflorus*), *Coprosma rotundifolia*, porokaiwhiri/pigeonwood (*Hedycarya arborea*), makomako/wineberry (*Aristotelia serrata*), patē (*Schefflera digitata*), red matipo (*Myrsine australis*), kaikōmako (*Pennantia corymbosa*), and tī kōuka/cabbage tree (*Cordyline australis*). The understory is regenerating well with tawa and tītoki seedlings. *Tradescantia fluminensis* and old man's beard

(*Clematis vitalba*) as well as woody species including karaka are common ecological weeds in Barton's Bush.

Domain Bush (2.7 ha) comprises emergent manatu/ribbonwood, tōtara, and kahikatea over a canopy of tawa, tarata/lemonwood (*Pittosporum eugenioides*), kaikōmako, tītoki and tūrepo/small-leaved milk tree (*Streblus heterophyllus*)<sup>21</sup>. The middle storey is comprised of māhoe, horoeka/lancewood (*Pseudopanax crassifolius*), tī kōuka/cabbage tree, mataī (*Prumnopitys taxifolia*), houhere/lacebark (*Hoheria populnea*), porokaiwhiri/pigeonwood, putaputawētā/marbleleaf (*Carpodetus serratus*), makomako/wineberry and whauwhaupaku/five finger (*Pseudopanax arboreus*). The ecological weeds including ivy (*Hedera helix*), Italian arum (*Arum italicum*), jasmine (*Jasminum polyanthum*), tradescantia, old man's beard, and Jerusalem cherry (*Solanum pseudocapsicum*) are in low densities in Domain Bush.

The Moehau Stream restoration project area (1.8 ha) which borders Barton Bush has been planted over many years by UHF&B with native trees, flax and sedges. Blackberry and old man's beard are common weeds along the stream bank. A 0.7 ha area to the north west of Barton's Bush has been planted since 2010 with native tree and shrub species by UHF&B and UHCC to act as a buffer for the bush remnant and is included within the KNE site boundary.

## Species

### Birds

The KNE site has a high mean bird species richness given its small size and degree of isolation from other bush blocks<sup>22</sup>. The nationally At-Risk and regionally critical kārearea/New Zealand falcon (*Falco novaeseelandiae*), nationally At-Risk pōpokatea/whitehead (*Mohoua albicilla*), as well as the regionally At-Risk kererū/New Zealand pigeon (*Hemiphaga novaeseelandiae*) are present within the KNE site<sup>23</sup>.

Other native bird species recorded at Trentham Memorial Park include the pīwakawaka/New Zealand fantail (*Rhipidura fuliginosa placabilis*), tūī (*Prothemadera novaeseelandiae novaeseelandiae*), tauhou/silvereye (*Zosterops lateralis*), riroriro/grey warbler (*Gerygone igata*), kōtare/New Zealand kingfisher (*Todiramphus sanctus*), pīpīwharau/shining cuckoo (*Chrysococcyx lucidus*), pūtangitangi/paradise shelduck (*Tadorna variegata*), spur-winged plover (*Vanellus miles*), karoro/Southern black-backed gull (*Larus dominicanus*), warou/welcome swallow (*Hirundo neoxena*) and kāhu/swamp harrier (*Circus approximans*)<sup>24,25</sup>.

### Lizards

The regionally threatened native copper skink (*Oligosoma aeneum*) is known to inhabit the site<sup>26</sup>.

### Fish

A tributary of Māwaihākona Stream flows through Domain Bush. Native tuna hinahina/shortfin eel (*Anguilla australis*) have been recorded in the reach downstream of the KNE site<sup>27</sup>.

### Invertebrates

A native species of snail (*Wainui* sp.) has been recorded in Domain Bush<sup>28</sup>.

## 7. Threats to ecological values at the KNE 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.

While the key threats discussed in this section are recognised as the most significant, it is important to note that not all threats can be adequately addressed. This can be for a number of reasons including financial, legal, or capacity restrictions. A number of other threats to the KNE site's values have also been identified. Appendix 4 presents a summary of all known threats to the Trentham Memorial Park 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 operational activities.

### 7.1. Key threats

The main threats to the ecological values present at Trentham Memorial Park KNE site are ecological weeds and pest animals. However, the KNE sites small size and the high public use are also considered threats.

Ecological weed species have the ability to outcompete and smother indigenous species preventing natural regeneration, altering the structure of the forest and reducing the diversity of food sources available. Both bush remnants within the KNE site have well documented weed infestations that have been targeted through active weed control over many years by management partners. However, with the sites' small size, large edge and border on residential properties, ecological weed reinvasion will always be an issue at this site. Along Moehau Stream there are a number of weed species that, if left uncontrolled, will prevent the establishment of the restoration planting undertaken by UHF&B.

Pest animals affect forest habitat by over-browsing native foliage, out-competing native species for food and nesting resources, and through direct predation. Possums (*Trichosurus vulpecula*), rats (*Rattus* spp.), and stoats (*Mustela erminea*) are the biggest threat at the KNE site. These species are known to compete for food resources such as seed, consume large quantities of canopy foliage and eat birds, bird eggs and invertebrates. Rabbits (*Oryctolagus cuniculus*) are also a threat to the main forest blocks and UHF&B's restoration plantings in Moehau Stream.

Recreation vehicles including quad bikes and 4WD's can damage plantings and native vegetation, and disturb nesting birds. Moehau Stream is particularly at risk and has for a number of years had restoration plantings damaged via recreation vehicles using the stream and its steep banks as training grounds. Unleashed dogs are also a threat and the current fencing needs to be maintained to keep dogs and people on the tracks.

Both forest remnants are vulnerable to the impacts of edge effects due to their small size and relatively large forest edge. Some studies suggest that forest fragments less than 9 ha are strongly influenced by edge patterns and processes<sup>29</sup>.

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 7, Appendix 4 presents a summary of all known threats to the Trentham Memorial Park

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 operational activities.

## 8. Vision and objectives

### 8.1. Vision

The Trentham Memorial Park KNE site has resilient and interconnected healthy native forest vegetation communities supporting thriving populations of native forest birds and lizards and provides an important habitat corridor in the Hutt Valley.

### 8.2. Objectives

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

The following objectives will guide the operational activities at the Trentham Memorial Park KNE site.

- 1 To protect and expand the areas of native forest plant communities***
- 2. To promote native regeneration within the forest blocks***
- 3. To reduce the browsing and predation pressure on native fauna***
- 4. To protect threatened native plants species (eg, white mistletoe)***
- 5. To monitor the success of management activities***

## 9. Operational activities

Operational activities are targeted to work towards the objectives above (Section 7) by responding to the threats outlined in Section 6. The broad approach to operational activities is described briefly below, and specific actions, with budget figures attached, are set out in the operational delivery schedule (Table 2). Operational areas have been assigned across the KNE site for management activities (see Appendix 1, Map 2) as follows;

- Operational Area A = Barton's Bush
- Operational Area B = Domain Bush
- Operational Area C = Moehau Stream Restoration Project
- Operational Area D = Additional Planting Area

### 9.1. Ecological weed control

The aim of weed control is to protect, and expand the areas of native forest plant communities and promote native regeneration of the bush blocks in the Trentham Memorial Park KNE site. Greater Wellington, with support from UHF&B and UHCC, will continue to focus on controlling ecological weed species throughout the KNE site with the priority being the bush blocks (Operational Areas A and B) and the Moehau Stream Restoration Project Area (Operational Area C). This activity will continue to increase native plant dominance across the KNE site, encourage native forest regeneration, and protect restoration plantings.

A biennial ecological weed sweep regime targeting a range of ecological weed species (See list of species in Tables 8 and 9, Appendix 5), alternating between Barton's Bush (Operational Area A) and Domain Bush (Operational Area B) each year will be undertaken by Greater Wellington using a broad-spectrum herbicide.

An annual weed sweep through the Moehau Stream Restoration Project (Operational Area C) will continue to be conducted by Greater Wellington targeting ecological weeds that are preventing the plantings from establishing, such as blackberry, old man's beard, convulvulus, Japanese honeysuckle and tradescantia (see full list of species in Table 10, Appendix 5). A weed sweep through the additional planting area (Operational Area D) will be incorporated as required. 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. The work programme will continue to be discussed each year with Forest and Bird and UHCC.

UHCC and UHF&B will continue undertaking additional ecological weed control throughout the KNE site as required. This includes working bees in the summer months in Operational Area C to control weeds affecting plantings associated with the restoration project, releasing plantings in the newly planted area (Operational Area D) and removing karaka seedlings and other invasive species encountered when servicing the bait stations in Operational Areas A and B.

## 9.2. Pest animal control

The aim of pest animal control is to reduce the browsing pressure on native vegetation, and reduce predation pressure on native fauna such as forest birds, lizards and invertebrates that inhabit the KNE site.

Pest animal control is primarily targeted at controlling possums and rats and secondarily, controlling stoats within the KNE site. The control methods used within the KNE site are known to keep possums, rats and stoats to low densities. The reduction in pest animals will also help protect the nesting and refuge habitats available for native birds, lizards and invertebrates and help facilitate regeneration of the native forest and supply of food resources for native fauna.

A network of 32 Pelifeed® bait stations were installed in 1998 to target possums and rats, and six DOC 200 traps were installed in 2016 to target stoats, in Operational Areas A and B (see Appendix 1, Map 3). UHF&B volunteers service the traps monthly and the bait stations quarterly with bait supplied by Greater Wellington.

Greater Wellington supports the volunteers with training and provision of bait. Greater Wellington Biosecurity staff undertake an annual health & safety and maintenance audit of the pest animal network within the KNE site to check the condition of the infrastructure and identify any health and safety risks to users.

Rabbits have more recently posed a threat to the Moehau Stream Restoration Project (Operational Area C) and new planting area (Operational Area D) by browsing on native restoration plantings. They are also posing a threat to main parts of the forest as well with browse of the understorey. UHCC funds additional rabbit control to help relieve the browsing pressure as required.

## 9.3. Revegetation

The aim of revegetation work is to protect, connect and expand the areas of native forest plant communities at Trentham Memorial Park KNE site. Restoration planting has been undertaken by UHF&B at the KNE site since 1994. Plants are grown by UHF&B's local nursery (using locally sourced seed) and are planted by volunteers. Planting originally focused on Barton's Bush (Operational Area A), Domain Bush (Operational Area B) and buffer areas between the two bush blocks but, has since focused on the Moehau Stream Restoration Project area (Operational Area C) and a newly planted area neighbouring Barton's Bush (Operational Area D). It is expected that restoration planting will continue to focus on infill planting of Moehau Stream (Operational Area C), and the main bush blocks and maintaining plantings in Operational Area D within the life of this plan.

Planting is coordinated and undertaken by UHF&B throughout the winter months with volunteer working bees. The exact location, species and numbers of plantings are determined annually by UHF&B and is dependent on plant availability and volunteer assistance.

Plantings within operational area C (Moehau Stream) are likely to continue focusing on wetland sedges (*Carex* spp.), harakeke flax (*Phormium tenax*), wetland trees (eg, kahikatea, pukatea, and cabbage trees) in the wetter areas and tōtara, mataī, and other forest trees in the drier areas.

The planting within Barton's Bush and Domain Bush will be focused on developing a forest understory and providing canopy and emergent species for forest succession. While Operational Areas A & B are no longer the primary focus of revegetation plans within the KNE site, in-fill planting may be undertaken by UHF&B within the five-year cycle of this plan.

#### **9.4. Other revegetation plantings**

UHCC and UHF&B will continue to undertake restoration planting within the wider Memorial Park, with the aim of creating more native cover and connecting the remnant forest bush reserves. This is undertaken separately from the KNE Programme and is separately funded. Locations of these plantings are determined on an annual basis.

#### **9.5. Threatened plant species propagation/protection**

UHF&B have been undertaking propagation of the nationally and regionally threatened white mistletoe (*Tupeia Antarctica*) within the KNE site, namely in Barton's Bush. They will continue to monitor and ensure its protection going forward, and may continue further propagation of this threatened species, and others during the life of this plan.

#### **9.6. Bird monitoring**

UHCC funds bird monitoring in a number of reserves in Upper Hutt, including at Trentham Memorial Park KNE, to monitor the trends in the diversity, abundance and distribution of native forest birds in Upper Hutt City's reserve network and measure biodiversity management outcomes. UHCC will continue to fund this monitoring which is undertaken annually.

#### **9.7. Photopoint monitoring**

Several aerial and ground-based fixed photopoints were installed at the KNE site by the Greater Wellington Biodiversity Advisor in 2020/21. The photopoints will be used to monitor the success of management activities (eg, ecological weed control and native revegetation planting) with annual monitoring undertaken.

#### **9.8. Fence monitoring and repair**

The high recreational use by walkers, dog-walkers, and runners has previously contributed to damaging both forest remnants and affecting the values of the KNE site. UHCC fenced off Barton's Bush and Domain Bush in 1995 to prevent trampling of the understory and accidental disturbance of the fauna. UHCC will continue to monitor the condition of fences and repair as necessary.

## 10. Operational delivery schedule

The operational delivery schedule in Table 2 shows the actions planned to achieve the stated objectives for the Trentham Memorial Park KNE site, and their timing and cost over the five-year period from 1 July 2021 to 30 June 2026. The budget for each year is indicative only and subject to change. A map of operational areas can be found in Appendix 1 (see Map 2).

**Table 2: Five-year operational plan for the Trentham Memorial Park KNE site**

Objective	Management Activity	Operational area	The actions: description/detail/comments	Intended 5 year outcome	Implementing party	Frequency and indicative cost (GST exclusive)				
						2021/22	2022/23	2023/24	2024/25	2025/26
1,2	Ecological weed control	A & B	Biennial weed sweep targeting a range of species in each bush block on a revolving cycle starting with Domain Bush	Increase native plant regeneration in the forest remnants and maintain nativeness	Greater Wellington Biosecurity Department	✓ (Ops Area B) \$1,200	✓ (Ops Area A) \$1,230	✓ (Ops Area B) \$1,260	✓ (Ops Area A) \$1,290	✓ (Ops Area B) \$1,320
1,2	Ecological weed control	C (D*)	Annual weed sweep targeting a range of species prior to restoration planting	Native restoration plantings are self-sufficient and thriving with low weed competition	Greater Wellington Biosecurity Department	✓ \$1,800	✓ 1,830	✓ \$1,860	✓ \$1,890	✓ \$1,920
1,2	Ecological weed control	A, B, C and D	Additional weed control throughout the KNE site (as required)	Increase native plant regeneration in the forest remnants and maintain native dominance	UHCC & UHF&B	* \$X	* \$X	* \$X	* \$X	* \$X
1,2,3,4	Pest animal control	A & B	Provision of bait/gear to UHF&B volunteers who service the pest animal network and training as required	An increase in abundance of native forest plants, birds and lizards & a fully functioning pest animal network	Greater Wellington Biosecurity Department / UHF&B	✓ \$670	✓ \$680	✓ \$690	✓ \$700	✓ \$710

Objective	Management Activity	Operational area	The actions: description/detail/comments	Intended 5 year outcome	Implementing party	Frequency and indicative cost (GST exclusive)				
						2021/22	2022/23	2023/24	2024/25	2025/26
1,2,3,4	Pest animal control	A & B	Annual maintenance service and safety audit of bait station and trap network to ensure safe and effective operation	Fully serviced pest animal network	Greater Wellington Biosecurity Department	✓ \$570	✓ \$580	✓ \$590	✓ \$600	✓ \$610
1	Pest animal control	C	UHCC funded rabbit control (as required by UHCC pre-restoration planting) undertaken by Greater Wellington	An increase in abundance of native plants	UHCC / Greater Wellington Biosecurity Department	* \$X	* \$X	* \$X	* \$X	* \$X
1,2	Revegetation	A, B, C & D	Annual programme of revegetation planting in Moehau Stream and infill planting elsewhere in the winter months	Provide a self-sustaining native vegetation buffer for Barton's/Domain Bush and increase habitat area for native fauna	UHF&B / UHCC (support)	✓ \$X	✓ \$X	✓ \$X	✓ \$X	✓ \$X
2	Bird monitoring	A & B	Annual bird monitoring and reporting on the results	To further understand native birds trends in the reserve	UHCC funded contractor	✓ \$4,350**	✓ \$4,350**	✓ \$4,350**	✓ \$4,350**	✓ \$4,350**
1	Photopoint monitoring	A, B, C & D	Annual review of aerial and ground-based fixed photopoints by the Greater Wellington Biodiversity Advisor (BA)	Monitor the success of operational activities by observing changes in vegetation	Greater Wellington Biodiversity Advisor	✓ \$BA time	✓ \$BA time	✓ \$BA time	✓ \$BA time	✓ \$BA time

Objective	Management Activity	Operational area	The actions: description/detail/comments	Intended 5 year outcome	Implementing party	Frequency and indicative cost (GST exclusive)				
						2021/22	2022/23	2023/24	2024/25	2025/26
1,2,3,4	Fence monitoring and repair	A and B	Monitoring and repair of the fencing around Barton's Bush and Domain Bush (as required)	Natural regeneration of Barton's Bush and Domain Bush is supported with limited disturbance	UHCC	*	*	*	*	*
						\$X	\$X	\$X	\$X	\$X

\* = As required

X = unknown cost

\*\* = Cost rounded-up to the nearest 5

## 11. Funding contributions

The funding contributions set out by Greater Wellington and UHCC in Tables 3 and 4 are for only those operational activities that have been costed with indicative budgets. Unknown costs for activities by UHF&B and UHCC have not been accounted for here.

### 11.1. Budget allocated by Greater Wellington

Table 3 below shows the known budget allocated by Greater Wellington for the life of this plan for operational activities at the site. The budget for each year accounts for annual inflation raises but is indicative only and subject to change. Unknown costs are not accounted for in Table 3.

**Table 3: Greater Wellington allocated budget for the Trentham Memorial Park KNE site**

Management activity	Timetable and resourcing (GST exclusive)				
	2021/22	2022/23	2023/24	2024/25	2025/26
Ecological weed control	\$1,500	\$1,530	\$1,560	\$1,590	\$1,620
Pest animal control	\$620	\$630	\$640	\$650	\$660
<b>Total</b>	<b>\$2,120</b>	<b>\$2,160</b>	<b>\$2,200</b>	<b>\$2,240</b>	<b>\$2,280</b>

### 11.2. Budget allocated by UHCC

Table 4 below shows the known budget allocated by UHCC for the life of this plan for operational activities at the site. The budget for each year accounts for annual inflation raises but is indicative only and subject to change. Unknown costs are not accounted for in Table 4.

**Table 4: UHCC allocated budget for the Trentham Memorial Park KNE site**

Management activity	Timetable and resourcing (GST exclusive)				
	2021/22	2022/23	2023/24	2024/25	2025/26
Ecological weed control*	\$1,500	\$1,530	\$1,560	\$1,590	\$1,620
Pest animal control**	\$620	\$630	\$640	\$650	\$660
Bird monitoring	\$4,350***	\$4,350***	\$4,350***	\$4,350***	\$4,350***
<b>Total</b>	<b>\$6,470</b>	<b>\$6,510</b>	<b>\$6,550</b>	<b>\$6,590</b>	<b>\$6,630</b>

\*This does not include the unknown costs associated with extra ecological weed control funded by UHCC on an ad-hoc basis as required

\*\* This does not include the unknown costs associated with additional rabbit control funded by UHCC on an ad-hoc basis as required.

\*\*\*This cost is rounded-up to the nearest 5

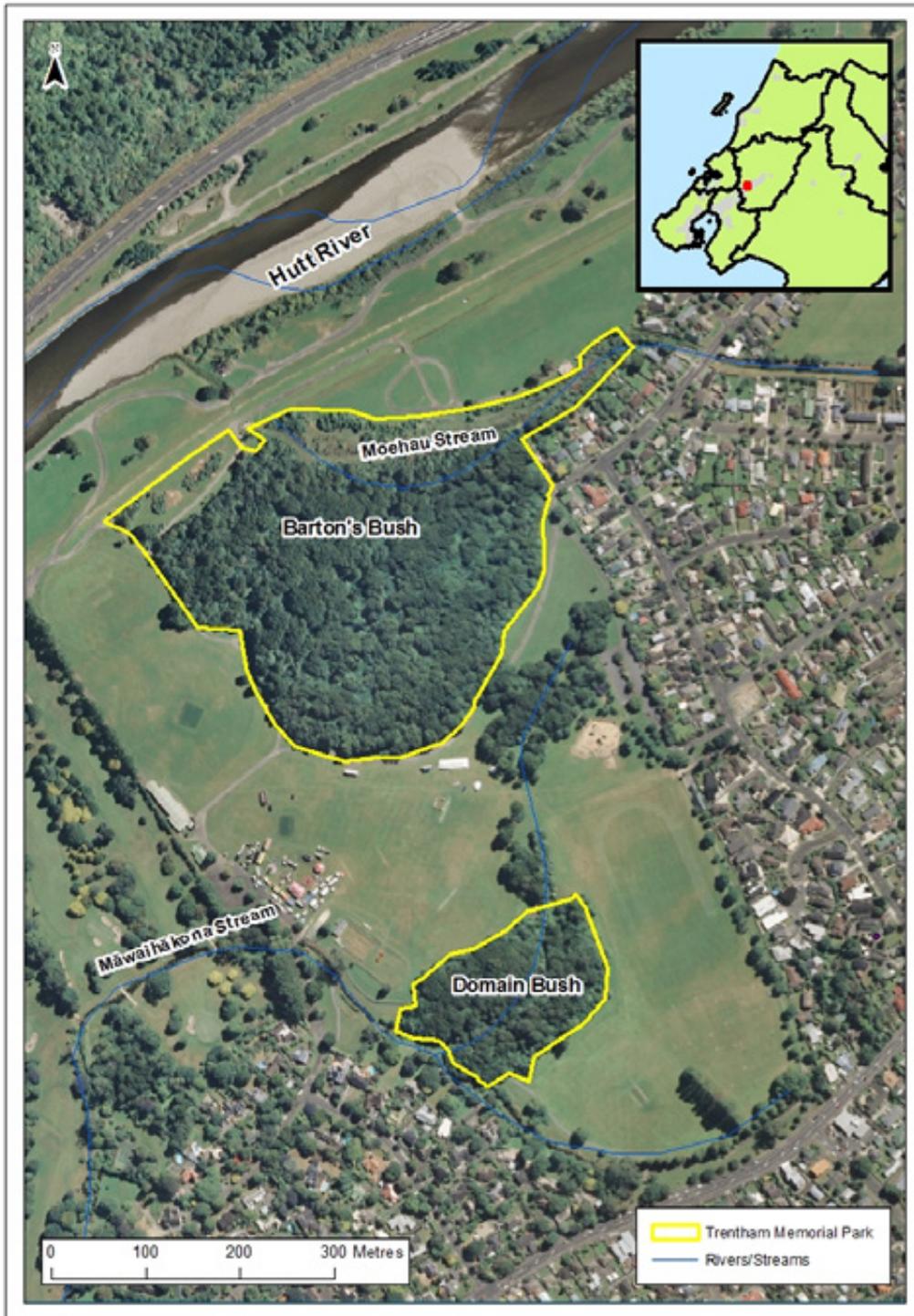
## 12. Future opportunities

Opportunities available within the KNE site for UHCC, Greater Wellington, UHF&B and/or other agencies to explore to add value to biodiversity management of the site in the future include:

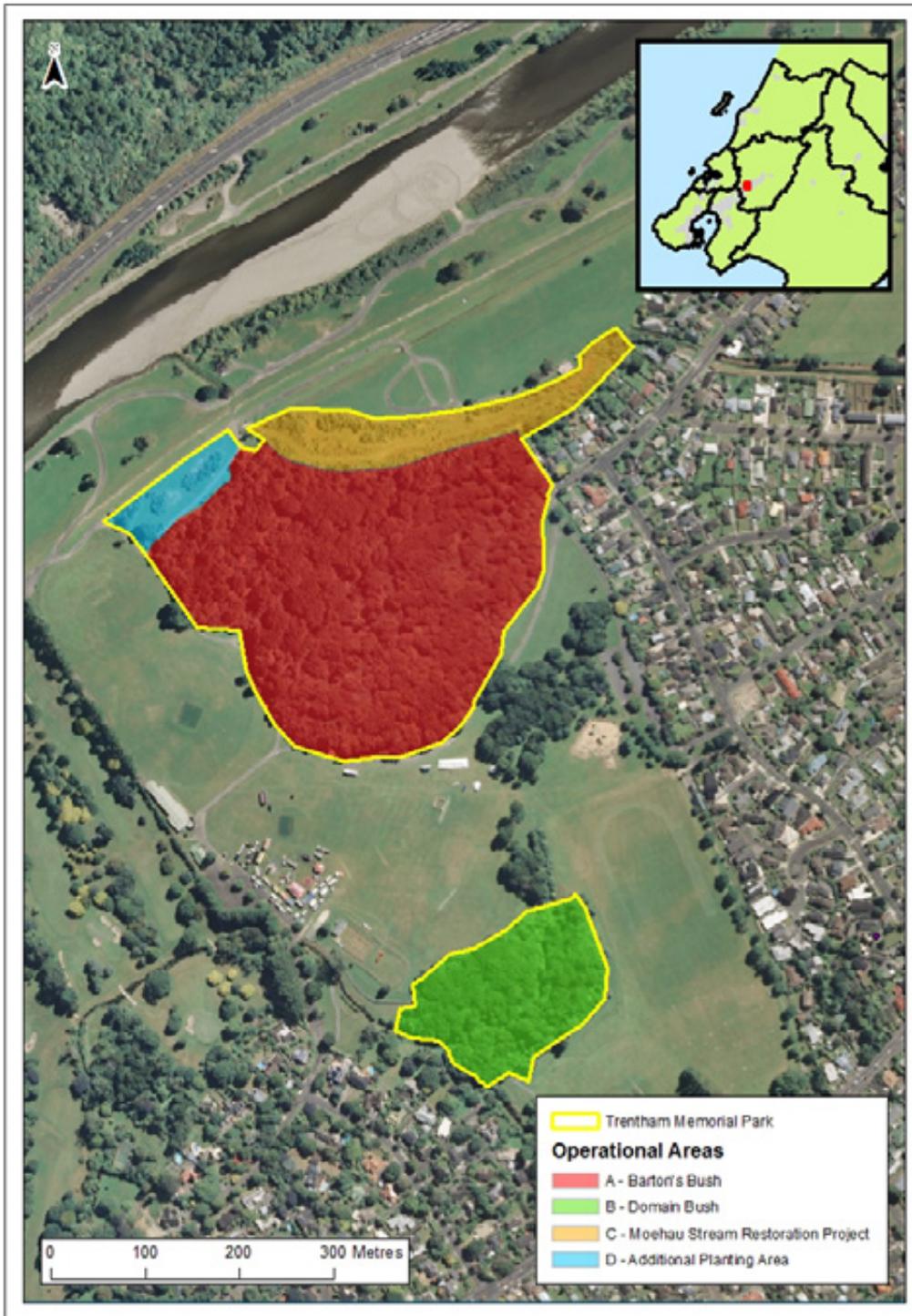
- Fencing off the Moehau Stream Restoration Project Area to discourage recreational vehicles (quad bikes, 4WD's) and the public accessing the area and damaging restoration plantings
- Propagation and revegetation planting of more threatened plant species
- Undertake a comprehensive lizard survey of the site

More intensive control of mustelids and hedgehogs for lizard protection (i.e. increasing frequency and more pest animal kit)

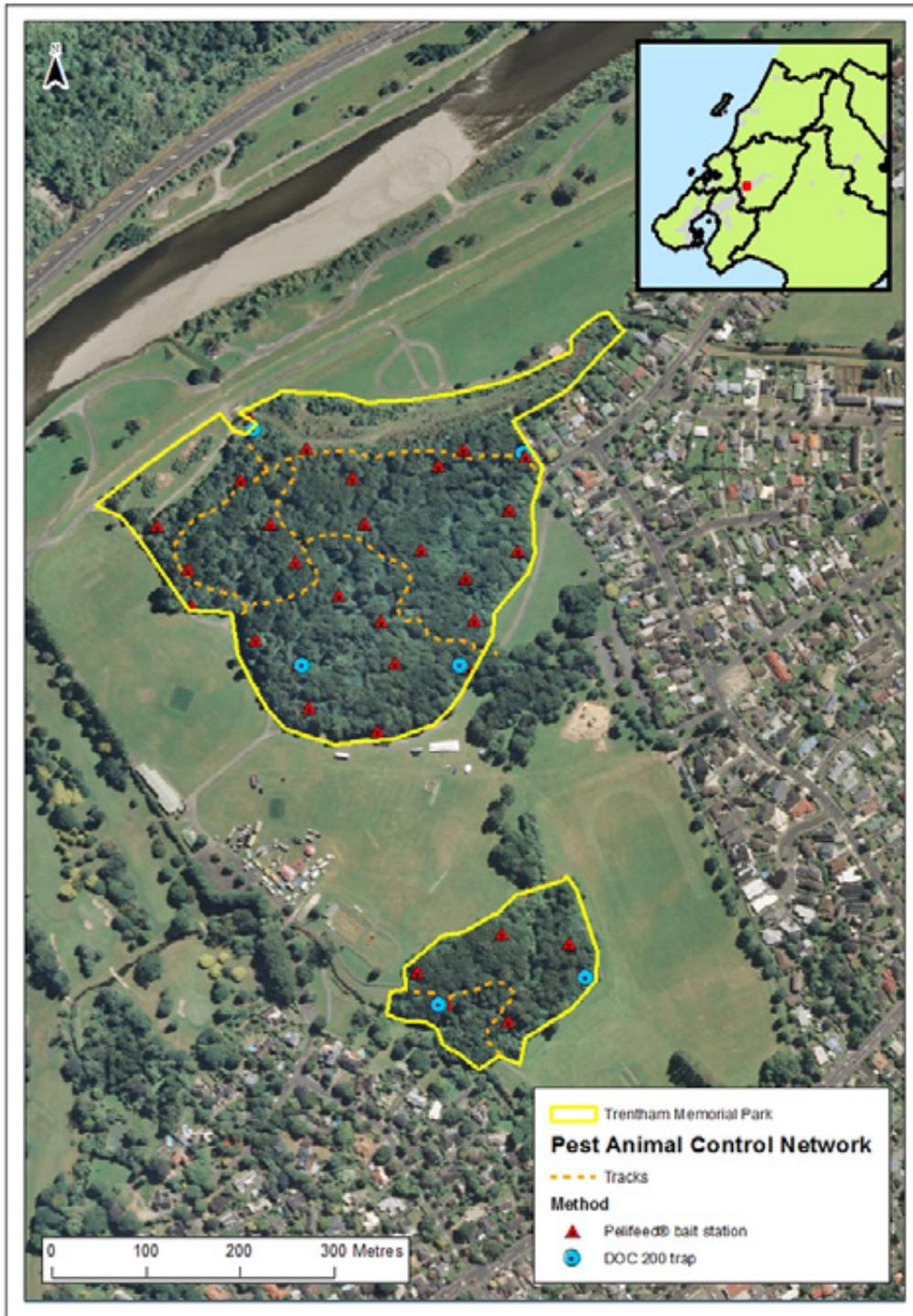
## Appendix 1: Site maps



Map 1: The Trentham Memorial Park KNE site boundary



Map 2: Operational areas in the Trentham Memorial Park KNE site



Map 3: Pest animal control network in the Trentham Memorial Park 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 cycle<sup>30</sup>. Species are regarded as At Risk if they are classified as Declining, Recovering, Relict or Naturally Uncommon. Table 5 below lists At Risk species that are resident in, or regular visitors to, the Trentham Memorial Park KNE site.

**Table 5: Nationally At Risk species at the Trentham Memorial Park KNE site**

Scientific name	Common name	Threat status	Observation
Plants(vascular) <sup>31</sup>			
<i>Teucrium parvifolium</i>	Teucrium	At Risk – Declining	Druce, 1992 <sup>32</sup>
<i>Tupeia antarctica</i>	White mistletoe	At Risk - Declining	Druce, 1992 <sup>33</sup>
Birds <sup>34</sup>			
<i>Falco novaeseelandiae</i>	New Zealand falcon	At Risk - Recovering	eBird database, 2020 <sup>35</sup>
<i>Mohoua albicilla</i>	Whitehead	At Risk – Declining	eBird database, 2020 <sup>36</sup>

### Appendix 3: Regionally threatened plant species list

Table 6 below lists regionally threatened species that have been recorded in the Trentham Memorial Park KNE site.

**Table 6: Regionally threatened species recorded in the Trentham Memorial Park KNE site**

Scientific name	Common name	Threat status	Observation
Plants <sup>37</sup>			
<i>Diplazium australe</i>	-	Regionally Vulnerable	Druce, 1992 <sup>38</sup>
<i>Ileostylus micranthus</i>	Green mistletoe	Regionally Uncommon	Druce, 1992 <sup>39</sup>
<i>Teucrium parvifolium</i>	Teucrium	Regionally Vulnerable	Druce, 1992 <sup>40</sup>
<i>Tupeia antarctica</i>	White mistletoe	Regionally Critical	Druce, 1992 <sup>41</sup>
Birds <sup>42</sup>			
<i>Falco novaeseelandiae</i>	New Zealand falcon	Regionally Critical	eBird database, 2020 <sup>43</sup>
<i>Hemiphaga novaeseelandiae</i>	New Zealand pigeon, kereru	At Risk - Recovering	eBird database, 2020 <sup>44</sup>
Reptiles <sup>45</sup>			
<i>Oligosoma aeneum</i>	Copper skink	Threatened Critical	Romijn, 2006 <sup>46</sup>

## Appendix 4: Threat table

Table 7 below lists all threats to ecological values present at the Trentham Memorial Park KNE site.

**Table 7: Summary of all threats to ecological values present at the Trentham Memorial Park KNE site**

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
Ecological weeds		
EW-1	Ground covering ecological weeds can smother and displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key ground covering ecological weed species include tradescantia ( <i>Tradescantia fluminensis</i> ), arum lily ( <i>Zantedeschia aethiopica</i> ) and agapanthus ( <i>Agapanthus praecox</i> subsp. <i>orientalis</i> ) (see full list in Appendix 5)	Entire KNE site
EW-2	Woody weed species displace native vegetation, inhibit indigenous regeneration, and alter vegetation structure and composition. Key woody ecological weed species include cherry species ( <i>Prunus</i> sp.), crack willow ( <i>Salix fragilis</i> ) and the non-local native karaka ( <i>Corynocarpus laevigatus</i> ) (see full list in Appendix 5)	Entire KNE site
EW-3	Climbing ecological weeds smother and displace native vegetation often causing canopy collapse, inhibit indigenous regeneration, and alter vegetation structure and composition. Key climbing ecological weed species include old man's beard ( <i>Clematis vitalba</i> ), jasmine ( <i>Jasminum polyanthum</i> ) and Japanese honeysuckle ( <i>Lonicera japonica</i> ) (see full list in Appendix 5)	Entire KNE site
Pest animals		
PA-1	Possums ( <i>Trichosurus vulpecula</i> ) browse palatable canopy vegetation until it can no longer recover <sup>47,48</sup> . This destroys the forest's structure, diversity and function. Possums may also prey on native birds and invertebrates <sup>49</sup>	Entire KNE site
PA-2	Rats ( <i>Rattus</i> 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 <sup>50,51</sup>	Entire KNE site
PA-3(*)	Mustelids (stoats <sup>52,53</sup> ( <i>Mustela erminea</i> ), ferrets <sup>54,55</sup> ( <i>M. furo</i> ) and weasels <sup>56,57</sup> ( <i>M. nivalis</i> )) prey on native birds, lizards and invertebrates, reducing their breeding success and potentially causing local extinctions	Entire KNE site
PA-4*	Hedgehogs ( <i>Erinaceus europaeus</i> ) prey on native invertebrates <sup>58</sup> , lizards <sup>59</sup> and the eggs <sup>60</sup> and chicks of ground-nesting birds <sup>61</sup>	Entire KNE site

Threat code	Threat and impact on biodiversity in the KNE site	Operational area/location
PA-5*	House mice ( <i>Mus musculus</i> ) 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 <sup>62,63</sup>	Entire KNE site
PA-6*	Feral, stray and domestic cats ( <i>Felis catus</i> ) prey on native birds <sup>64</sup> , lizards <sup>65</sup> and invertebrates <sup>66</sup> , reducing native fauna breeding success and potentially causing local extinctions <sup>67</sup>	Entire KNE site
PA-7*	Rabbits ( <i>Oryctolagus cuniculus</i> ) and hares ( <i>Lepus europaeus</i> ) graze on palatable native vegetation and prevent natural regeneration in some environments <sup>68</sup> . 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 ( <i>Vespula</i> spp.) adversely impact native invertebrates and birds through predation and competition for food resources. They also affect nutrient cycles in beech forests <sup>69</sup>	Entire KNE site
PA-9*	Australasian magpies are known to modify the behaviour of native birds, which could inhibit the ability of native birds to feed and breed freely	Entire KNE site
Human activities		
HA-1*	Garden waste dumping often leads to ecological weed invasions into natural areas. Common weed species introduced at this KNE site include: arum lily and tradescantia	Edges bordering residential properties
HA-2*	Land use activities that alter the local hydrology, such as water takes for commercial industry and surrounding land development can affect the groundwater table that sustains forest blocks	Entire KNE site
HA-3*	Dogs ( <i>Canis lupus familiaris</i> ), if uncontrolled/unleashed can disturb or kill nesting birds and chicks, and lizards within the KNE site, particularly in close proximity to walking tracks <sup>70</sup>	Moehau Stream and unfenced sections
HA-4*	Recreational vehicles such as 4WDs and quadbikes can cause damage to restoration plantings and disturbance of the native ecosystem	Moehau Stream
Other threats		
OT-1*	Edge effects affect forest remnants by changing environmental conditions (eg, soil moisture or temperature levels), changing physical environment (eg, different plant assemblages compared to the interior) and changing species interactions (eg, increased predation by invasive species) <sup>71,72</sup>	Entire KNE site

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

(\*) Stoats are the only mustelid controlled in the KNE site

## Appendix 5: Ecological weed species

The following tables 8-10 list key ecological weed species that have been recorded within Operational Area A (Barton's Bush), Operational Area B (Domain Bush) and Operational Area C (Moehau Stream Restoration Project) of the Trentham Memorial Park KNE site. The distribution and density of individual species within each operational area is recorded. Three levels of distribution (localised, patchy and widespread) and density (sparse, abundant and dense) are used to describe these aspects of infestations of each species.

**Table 8: Ecological weed species recorded in Operational Area A (Barton's Bush) of the Trentham Memorial Park KNE site**

Scientific name	Common name	Level of distribution	Management aim
<i>Acer pseudoplatanus</i>	Sycamore	Widespread and sparse	Suppression
<i>Aesculus hippocastanum</i>	Horse chestnut	Widespread and sparse	Suppression
<i>Allium triquetrum</i>	Onion weed	Localised and sparse	No active control
<i>Alstromeria sp.</i>	Lily of the Incas	Localised and sparse	Eradication
<i>Berberis darwinii</i>	Darwin's barberry	Not currently present	Surveillance
<i>Clematis vitalba</i>	Old man's beard	Widespread and abundant	Suppression
<i>Conium maculatum</i>	Hawthorn	Not currently present	Surveillance
<i>Corylus sp.</i>	Hazelnut	Localised and sparse	Suppression
<i>Corynocarpus laevigatus</i>	Karaka*	Widespread and abundant	Suppression
<i>Crocsmia x crocosmiiflora</i>	Montbretia	Patchy and sparse	Suppression
<i>Cytisus scoparius</i>	Broom	Patchy and sparse	No active control
<i>Fatsia japonica</i>	Fatsia	Localised and sparse	Suppression
<i>Foeniculum vulgare</i>	Fennel	Patchy and sparse	No active control
<i>Hedera helix</i>	English ivy	Patchy and sparse	Suppression
<i>Ilex aquifolium</i>	Holly	Not currently present	Surveillance
<i>Iris foetidissima</i>	Stinking iris	Patchy and sparse	Eradication
<i>Leycesteria formosa</i>	Himalayan honeysuckle	Localised and sparse	Suppression
<i>Lonicera japonica</i>	Japanese honeysuckle	Localised and sparse	Suppression
<i>Parietaria judaica</i>	Pellitory of the wall	Not currently present	Surveillance
<i>Prunus sp.</i>	Cherry species	Widespread and abundant	Suppression
<i>Rubus fruticosus agg.</i>	Blackberry	Localised and sparse	Suppression
<i>Salix fragilis</i>	Crack willow	Localised and sparse	Suppression

Scientific name	Common name	Level of distribution	Management aim
<i>Sambucus nigra</i>	Elderflower	Patchy and sparse	Suppression
<i>Selaginella kraussiana</i>	African club moss	Localised and sparse	Eradication
<i>Solanum pseudocapsicum</i>	Jerusalem cherry	Widespread and abundant	Suppression
<i>Syzygium australe</i>	Brush cherry	Patchy and sparse	Suppression
<i>Syzygium smithii</i>	Monkey apple	Localised and sparse	Suppression
<i>Trachycarpus fortunei</i>	Chinese windmill palm	Localised and sparse	Suppression
<i>Tradescantia fluminensis</i>	Tradescantia	Widespread and dense	Suppression
<i>Vinca major</i>	Periwinkle	Localised and sparse	Suppression

\* Denotes a New Zealand native plant that is not local to the KNE site

**Table 9: Ecological weed species recorded in Operational Area B (Domain Bush) of the Trentham Memorial Park KNE site**

Scientific name	Common name	Level of distribution	Management aim
<i>Acer pseudoplatanus</i>	Sycamore	Widespread and sparse	Suppression
<i>Aesculus hippocastanum</i>	Horse chestnut	Widespread and sparse	Suppression
<i>Agapanthus praecox</i> subsp. <i>orientalis</i>	Agapanthus	Localised and sparse	Suppression
<i>Allium triquetrum</i>	Onion weed	Localised and sparse	No active control
<i>Arum italicum</i>	Italian arum	Patchy and sparse	Suppression
<i>Asparagus scandens</i>	Climbing asparagus	Localised and sparse	Eradication
<i>Clematis vitalba</i>	Old man's beard	Patchy and sparse	Suppression
<i>Corynocarpus laevigatus</i>	Karaka*	Patchy and sparse	Suppression
<i>Cytisus scoparius</i>	Broom	Patchy and sparse	No active control
<i>Fatsia japonica</i>	Fatsia	Patchy and sparse	Suppression
<i>Hedera helix</i>	English ivy	Patchy and abundant	Suppression
<i>Iris foetidissima</i>	Stinking iris	Patchy and sparse	Eradication
<i>Jasminum polyanthum</i>	Jasmine	Patchy and sparse	Eradication
<i>Leycesteria formosa</i>	Himalayan honeysuckle	Patchy and sparse	Eradication
<i>Lonicera japonica</i>	Japanese honeysuckle	Patchy and sparse	Eradication
<i>Parietaria judaica</i>	Pellitory of the wall	Not currently present	Surveillance
<i>Prunus</i> sp.	Cherry species	Patchy and sparse	Suppression
<i>Rubus fruticosus</i> agg.	Blackberry	Patchy and sparse	Suppression
<i>Sambucus nigra</i>	Elderflower	Patchy and sparse	Suppression

Scientific name	Common name	Level of distribution	Management aim
<i>Selaginella kraussiana</i>	African club moss	Patchy and sparse	Eradication & surveillance
<i>Solanum pseudocapsicum</i>	Jerusalem cherry	Patchy and sparse	Suppression
<i>Syzygium australe</i>	Brush cherry	Patchy and sparse	Suppression
<i>Syzygium smithii</i>	Monkey apple	Patchy and sparse	Surveillance
<i>Tradescantia fluminensis</i>	Tradescantia	Widespread and abundant	Suppression
<i>Vinca major</i>	Periwinkle	Patchy and sparse	Suppression
<i>Zantedeschia aethiopica</i>	Arum lily	Localised and abundant**	Surveillance and control if required

\* Denotes a New Zealand native plant that is not local to the KNE site

\*\*Found in the Māwaihākona Stream immediately adjacent to Domain Bush

**Table 10: Ecological weed species recorded in Operational Area C (Moehau Stream Restoration Project) of the Trentham Memorial Park KNE site**

Scientific name	Common name	Level of distribution	Management aim
<i>Acer pseudoplatanus</i>	Sycamore	Widespread and abundant	Suppression
<i>Agapanthus praecox</i> subsp. <i>orientalis</i>	Agapanthus	Localised and sparse	Suppression
<i>Allium triquetrum</i>	Onion weed	Widespread and abundant	No active control
<i>Arum italicum</i>	Italian arum	Localised and sparse	Eradication
<i>Clematis vitalba</i>	Old man's beard	Widespread and abundant	Suppression
<i>Convolvulus</i> sp.	Convolvulus	Patchy and abundant	Suppression
<i>Corynocarpus laevigatus</i>	Karaka*	Patchy and abundant	Suppression
<i>Crocsmia x crocosmiiflora</i>	Montbretia	Patchy and abundant	Suppression
<i>Cytisus scoparius</i>	Broom	Localised and sparse	No active control
<i>Escallonia</i> sp.	Escallonia	Localised and sparse**	No active control
<i>Fatsia japonica</i>	Fatsia	Localised and sparse	Eradication
<i>Foeniculum vulgare</i>	Fennel	Patchy and sparse	No active control
<i>Hedera helix</i>	English ivy	Patchy and sparse	Suppression
<i>Iris foetidissima</i>	Stinking iris	Widespread and abundant	Suppression
<i>Jasminum polyanthum</i>	Jasmine	Localised and sparse	Suppression
<i>Leycesteria formosa</i>	Himalayan honeysuckle	Localised and sparse	Suppression

Scientific name	Common name	Level of distribution	Management aim
<i>Lonicera japonica</i>	Japanese honeysuckle	Patchy and sparse	Suppression
<i>Parietaria judaica</i>	Pellitory of the wall	Not currently present	Surveillance
<i>Prunus</i> sp.	Cherry species	Patchy and sparse	No active control
<i>Rubus fruticosus</i> agg.	Blackberry	Widespread and dense	Suppression
<i>Salix fragilis</i>	Crack willow	Localised and sparse	Suppression
<i>Sambucus nigra</i>	Elderflower	Localised and sparse	Suppression
<i>Solanum pseudocapsicum</i>	Jerusalem cherry	Widespread and abundant	No active control
<i>Syzygium australe</i>	Brush cherry	Widespread and abundant	No active control
<i>Tradescantia fluminensis</i>	Tradescantia	Widespread and abundant	Suppression
<i>Vinca major</i>	Periwinkle	Patchy and sparse	Suppression
<i>Zantedeschia aethiopica</i>	Arum lily	Patchy and sparse	Suppression

\* Denotes a New Zealand native plant that is not local to the KNE site

\*\*Found just outside Operational Are

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