



Spicer Forest

**Vegetation Management, Recreation
and Landscape Development**

**Implementation Plan
2016 - 2026**



Pine forest east of the airfield

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Introduction

This plan for vegetation management, recreation and landscape development of the Spicer Forest is to help guide Council's management of Spicer Forest over the next 10 years (2016-2026).

Spicer Forest is a 73 hectare reserve between Rangituhi / Colonial Knob Scenic Reserve and Spicer Landfill to the north, the top of Ohariu Valley Road to the south, Tawa to the east and farmland to the west (see Location Map Figure 1). Ohariu Stream runs through the reserve, with Porirua Council owning land west of the stream and Wellington City Council owning the rest of the land. Te Araroa Trail runs along Ohariu Stream then climbs to the top of the valley where it ascends to Rangituhi / Colonial Knob Scenic Reserve and Te Rahui o Rangituhi.

What the plan covers

- Vegetation management
- Priority areas for weed control
- Tracks for walking, mountain biking and horse riding
- Locations for facilities that support recreation - low development areas with picnic sites, viewpoints, seats, signage, hitching posts, mounting blocks and parking
- Locations for commemorative planting.

The steep slopes west of Ohariu Stream are excluded from the plan. The pine forest in this area has been damaged by storms and is closed for recreational use. This area will naturally regenerate into indigenous cover over time. Fallen pines are left where they fall except where they interfere with Te Araroa Trail.

Background - the context

Spicer Pine Forest Management

The radiata pine plantation that covers much of the reserve was planted in 1986. It is due to be harvested in 2016 with the block of pine forest next to the airfield due to be harvested in 2021.

Harvesting and replanting for forestry in Spicer Forest is no longer a Council objective¹, and the emphasis is now on improving ecological linkages of indigenous vegetation and providing for recreation. An issue that makes harvesting less desirable today is the cost of replanting in indigenous vegetation after logging. The alternative of leaving the area to revert back through natural succession and regeneration will take many years to succeed. Wilding pine, gorse and blackberry are likely to dominate with associated fire risks and reduced landscape, amenity and recreation values, ecological values, soil and water quality.

These values were identified in a 2009 discussion document, along with future management options for the forest and the land.² The discussion document concluded that it is important to retain a diverse woody vegetation cover and identified three management options: clear felling the pine forest and managing the land back to either an indigenous or exotic vegetation cover, staged logging and gradually transitioning the land back to indigenous vegetation cover, or retaining the pine forest cover, managing it and developing the forest for recreation.³

¹ Wellington's Outer Green Belt Management Plan, page 77.

² Spicer Forest Joint venture Forest Management Options - Discussion Document, April 2009

³ Ibid pages 1-10.

Landscape, amenity and recreation

The reserve at Spicer Forest is part of a wider recreation park, a joint venture between Wellington and Porirua City Councils. The park is made up of five reserve areas with trails and important ecological connections (see Figure 2).

The role of Spicer Forest in the wider recreation park:

- It is the park's southern most entrance. Walkers and mountain bikers can access the wider park from Ohariu Valley Road through the reserve at Spicer Forest
- The access road through the reserve connects to Spicer Botanical Park and wider walking and mountain bike trails via Spicer Link.
- Te Araroa national trail through the reserve connects to Te Rahui o Rangituhi and Rangituhi / Colonial Knob Scenic Reserve
- Spicer Forest is the only reserve in the wider park with trails for horses
- The pine cover in Spicer Forest provides a recreational experience not provided elsewhere in the wider recreation park.

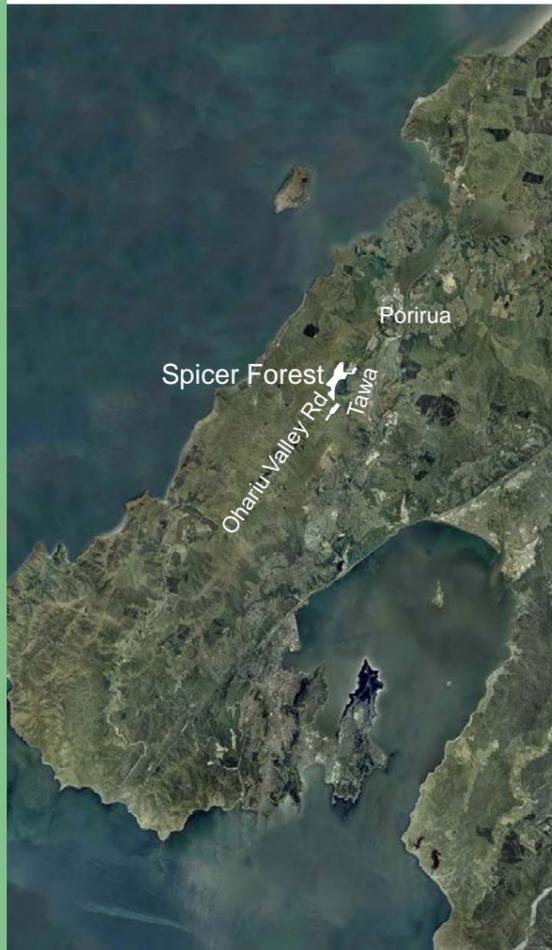


Figure 1- Location map



Top of Ohariu Valley Road, Ohariu Stream and Te Araroa Trail



Track through Spicer pine forest

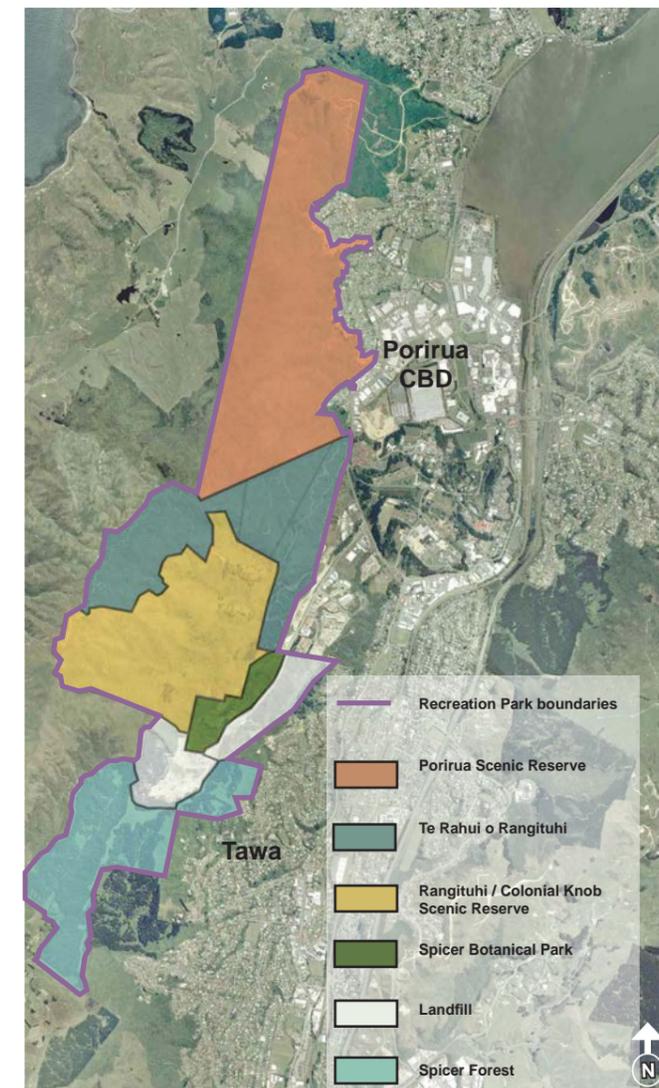


Figure 2- The reserve at Spicer Forest is the southern most entrance to a wider recreation park, a joint venture between Wellington and Porirua City Councils.

Summary

The following summarises vegetation management, recreation and landscape development of the reserve at Spicer Forest from 2016 to 2026:

Vegetation management (see pages 5-8)

The long term aim is to gradually return the pine forest to indigenous plant canopy. However, because the pine forest has a range of values in addition to its timber value (carbon sequestration, recreation, landscape, amenity, ecological, soil and water), vegetation management over the next 10 years varies from location to location within the reserve:

- 1. Increase the size of existing light wells:** Where there are existing light wells within the pine canopy and a diverse understorey of more than 1 metre, the size of light wells is gradually increased through natural processes supplemented by removal of pine trees at light well edges, controlling weeds that inhibit natural indigenous plant succession and in some locations supplementing the process by planting. In this way the pine forest cover will change to indigenous cover over time.
- 2. Retain and manage some of the pine canopy and develop tracks:** This will provide a variety of experiences from the enclosed pine forest through established and regenerating indigenous vegetation with open areas on ridge tops to the north and south of the reserve.
- 3. Retain the pine canopy on the eastern side of the landfill:** This is to keep a buffer between the landfill and Tawa over the next ten years.
- 4. Harvest the pine forest and replant using indigenous species:** This is in locations where the pine forest has good canopy closure, low levels of indigenous understorey and close to a road or track where logs can be transported without damaging existing areas of regenerating indigenous plants.
- 5. Weed removal and planting indigenous species:** Where the pine cover has been cleared, above battered slopes along the road through the reserve and along Ohariu Stream and in wetlands.
- 6. Preserve views:** Manage vegetation at viewpoints to preserve views. Any restoration planting at or below viewpoints will be lower growing species.

Weed control (see pages 9-10)

Weeds to control are those that inhibit natural regeneration of indigenous plant species. Priority areas for weed control are:

1. Where the pine cover has been cleared.
2. The reserve entrance where Ohariu Stream enters the reserve.
3. Open areas along the edges of the road through the reserve.
4. Along Te Araroa Trail and Ohariu Stream and wetlands.
5. Environmental weed pests such as old man's beard and gunnera.

Track development (see page 11)

Tracks are for walking, mountain biking and horse riding. The reserve is part of a wider walking and mountain biking track network, with the Outer Green Belt to the south and Porirua's Recreation Park to the north, where an extensive track network for walking and mountain biking is under development. Walking and mountain bike tracks in the reserve are designed to connect with this wider network.

Main features of tracks within the reserve are:

- Tracks for horse riding and mountain bikes are separated. Mountain bikers are slowed down before they reach the locations where tracks intersect. Planting taller species including commemorative planting between Spicer Forest Road and the horse track will reduce sight lines to the road from the horse track for safety.
- Walkers and dog walkers (dogs on lead only) share tracks with other track users
- Walkers and mountain bikes share Spicer Forest Road. It is expected that most mountain bikers will use tracks rather than the road.

Facilities supporting recreational use (see page 12)

- Picnic sites with picnic tables: The first is where Ohariu Stream enters the reserve and walking, mountain biking and horse riding trails and Te Araroa Trail converge. This is also a location for commemorative planting. The second is at the edge of the airfield which is currently accessed from 944 Ohariu Road. A future track link will attract more use to this area. A further picnic site where Te Araroa Trail, mountain biking and horse riding trails meet at the top of the landfill is an option when the landfill closes. Currently the adjacent landfill means that people are less likely to linger
- Hitching posts and mounting blocks at the beginning and midpoint along horse riding tracks
- Signage with information at reserve entrances and directional signage colour-coded to show track use at the beginning and ends of tracks and where different users meet
- Seats at some viewpoints and in picnic areas.

Commemorative tree planting (see page 13)

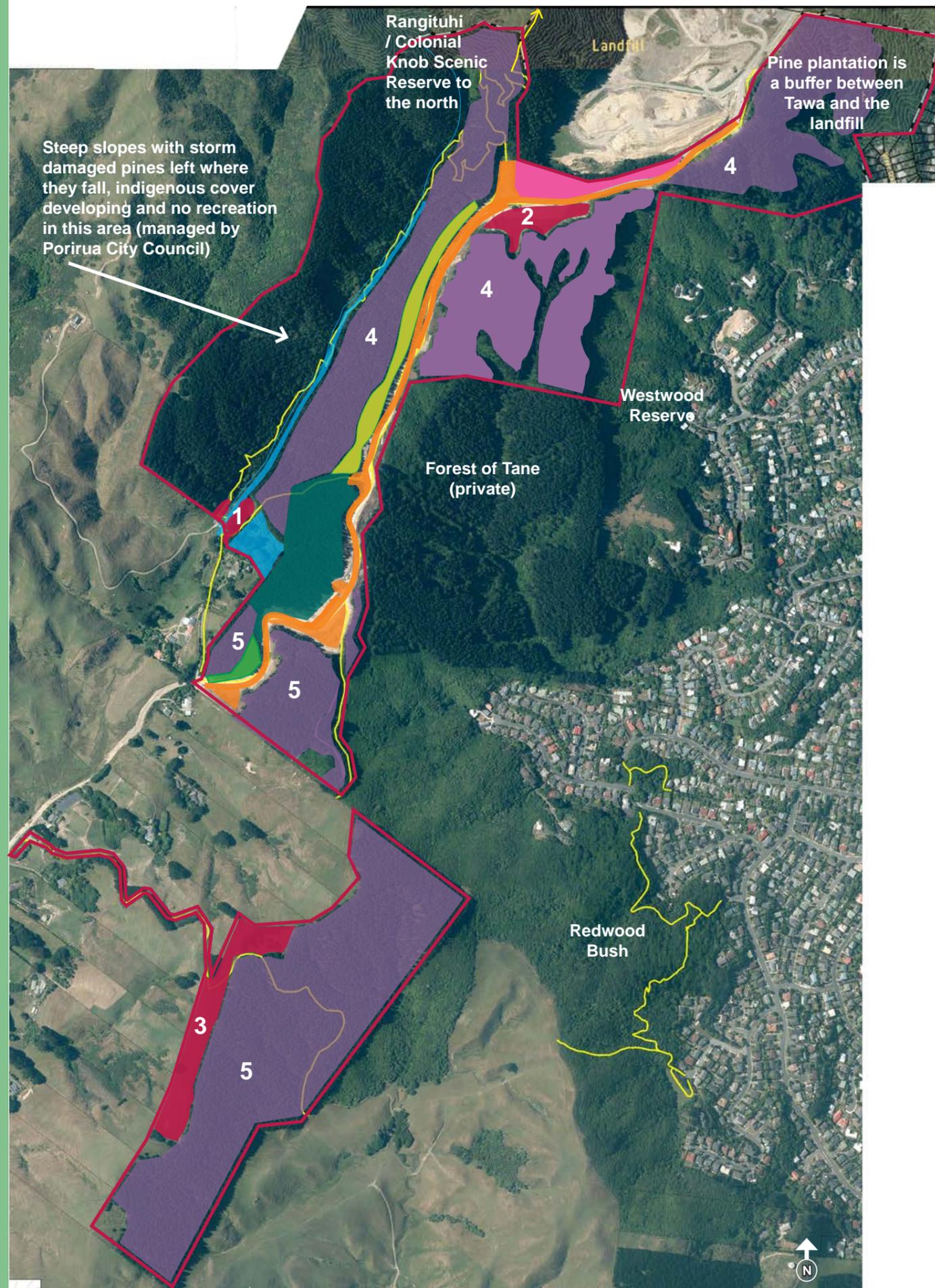
Commemorative trees are indigenous specimen trees honouring a particular person or for remembering an event or time. In this reserve, commemorative trees include kahikatea, rimu, Northern rata, totara, tawa, kohekohe, putaputaweta, miro and matai. Locations for commemorative trees are:

- At the reserve entrance where Ohariu Stream enters the reserve
- Along the western side of Te Araroa Trail

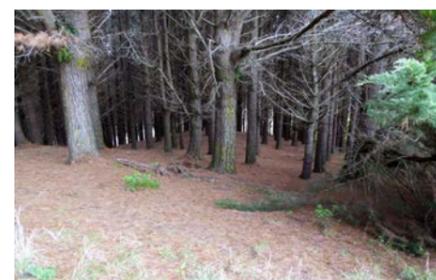


View north toward Rangituhi/Colonial Knob in the distance

Current Vegetation types



- Reserve boundary.
- Stream/wetland areas with weeds including large patches of blackberry.
- Open areas with rank grass or pasture grasses:
 - 1 Sheltered open area with rank grass, *Macrocarpa*, *Pinus radiata*, Leyland cypress, Dawn redwoods, large patches of blackberry.
 - 2 Sheltered open area with rank grass with an uneven surface.
 - 3 Airstrip block - grazed to keep the ridgeline open.
- Pines have been removed and the consequent cover of wilding pines treated chemically. Emerging indigenous plant species and weed species. Weeds include gorse, Himalayan honeysuckle and blackberry.
- Open areas and battered slopes along the road through Spicer Forest. Battered slopes have been hydro seeded in grass. Wilding pines and weed species such as gorse and blackberry are starting to invade battered slopes and at the top of battered slopes.
- Area clear of pines planted in a variety of indigenous species in June 2016.
- Buffer planting at the landfill edge. Existing pines with Japanese cedar and native species planted by Porirua City Council in 2015/1016 will eventually fill gap in tree buffer at the top of the landfill.
- Naturally regenerating diverse indigenous species
- Pine forest with indigenous understorey varying from under 1 metre to over 3 metres and in species diversity. In places where fallen pines have created light wells there is a more diverse indigenous understorey than areas where the pine canopy is denser or where pine needles cover the ground. The pine forest with pockets of emerging indigenous vegetation creates variety for recreational users.
- 4 Understorey up to 3m and a variety of indigenous plant species. In these areas, Wildlands Consultants (2013) predict that the understorey will likely be maintained, and may increase in height and species diversity. When pine trees fall, die or are removed creating light wells, the indigenous understorey is predicted to establish a canopy within five years. On lower slopes in sheltered places with light wells, canopy closure is predicted within one or two years. Indigenous species will seed out from these areas and attract birds which will also assist seed dispersal. In these areas the management approach is to change the vegetation cover over time.
- 5 Understorey more sparse and generally less than 1m, less diverse indigenous plant species and in some places a dense pine needle mat. In these areas Wildlands (2013) predicts that if the canopy opens up due to tree fall or tree removal, it may take four to five years for initial species such as ground ferns, mahoe, kawakawa, and kanono to establish a canopy. Species diversity may increase after that. In areas that are close to an indigenous seed source, canopy gap closure is likely to be faster. In these areas, the approach is to harvest the pine forest and, where practicable, replant using indigenous species.



Pine forest with sparse understorey

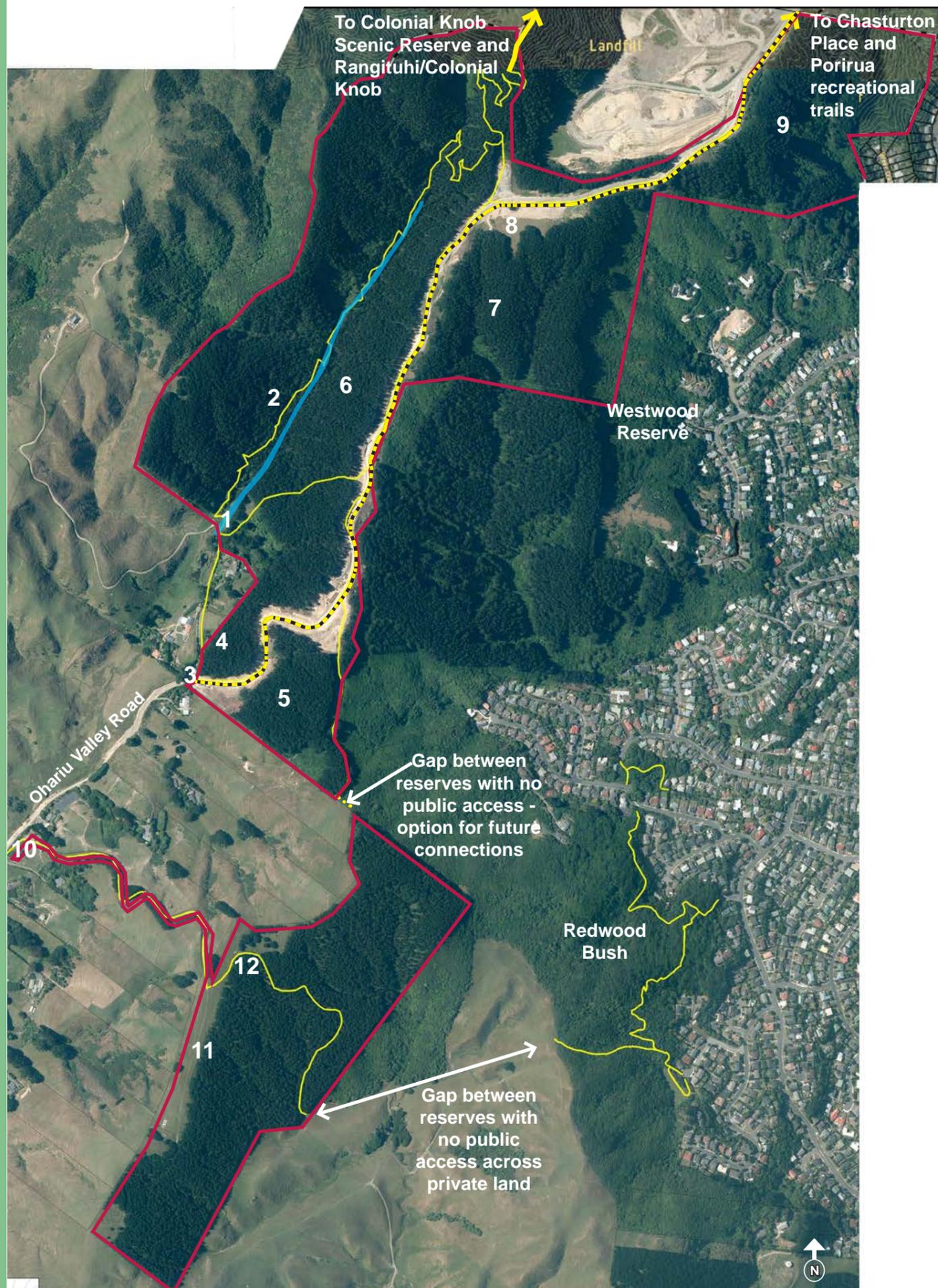


Wilding pines where pines have been cleared



Planting at landfill edge

Figure 3 - Current vegetation types



Current tracks

- Reserve boundary
- Existing tracks, including Te Araroa
- Road through Spicer Forest (built for Mill Creek Wind farm)

- 1 Current Te Araroa Trail entry/exit and where Ohariu Stream exits the reserve. Sheltered open grass area suitable as a picnic area.
- 2 Te Araroa Trail along Ohariu Stream shared by walkers and mountain bikers.
- 3 Reserve entrance, space for turning circle, vehicle and horse float parking, locked gates to Spicer Forest Road, mountain bike entry/exit, locked gate for horse riding access.
- 4 Stream and indigenous vegetation separate the reserve entrance from a small stand of pines on the reserve boundary.
- 5 Stand of pines with a clear understorey make this a suitable area for development of a horse riding trail separate from mountain bikers, and which would link with the ridgeline track to the south once access over private land has been negotiated.
- 6 Pine forest on land which becomes steeper at the top of the gully. An existing track connects to Spicer Forest Road. The sheltered and enclosed pine forest provides an experience that is different from other parts of the Outer Green Belt and Colonial Knob / Te Rangituhi.
- 7 Pine forest sloping down to private land to the east. An option for recreational connections is development of a track through the reserve to Westwood Reserve and Tawa.
- 8 Sheltered area with rank grass and an uneven surface. A pleasant site which could be developed into a picnic area in the future. Currently the adjacent landfill is likely to deter people from lingering.
- 9 Steep pine forested area with a track on the landfill side connecting to Chasturton Place and Spicer Botanical Park (the hub for a network of trails in the western hills of Porirua).
- 10 Entrance to reserves at 944 Ohariu Valley Road has no signage or information.
- 11 Airstrip and pine forest accessed by the Ohariu Valley horse riding community. They would like this area developed with loop tracks, canter track and cross country jumps, hitching post and mounting block. Use of this area would complement tracks in Spicer Forest when the two reserve areas are linked across private land.
- 12 Locked gate controls access through the pine forest and across private land to Tawa. Since the gate closure the track has become overgrown with blackberry. The gate also controls sheep and cattle that graze on the airstrip from accessing the forest.

Figure 4 - The current situation

Vegetation management

While pines remain on the site, wilding pines will continue to be a problem and slow progress in replacing the pine forest with an indigenous plant canopy. However, removing all pines is not a solution unless they are immediately replaced and weeds controlled until an indigenous canopy forms. The issues that come from removing all pines are demonstrated in an area where pines have been mechanically removed. The result is a dense ground cover of pine seedlings, debris from pine removal limits access for recreation and the area is visually unattractive. Removing all pines may result in erosion and increased sediment in Ohariu Stream, fewer nesting and roosting places for birds that carry seeds and less shelter for indigenous plant seedlings. Removing all pines immediately also reduces the recreational experience. For all these reasons, felling all of the pine forest is not recommended over the duration of this plan.

In many of the gullies within the pine forest and in light wells where pine trees have fallen or failed, the indigenous understory canopy ranges from less than 1 metre height to over 3 metres. Trees at the exposed edges of the pine forest and the edges of light wells are more likely to fail than trees within the forest canopy. Therefore, over time, the size of light wells will gradually increase and the indigenous understory will increase in height, density and species diversity.

The approach is to accelerate this natural process in some locations by felling or chemically treating pine trees on the edges of light wells (see Figure 5 for approximate light well locations). In places with few light wells, the process can be started by felling or chemically treating the pine trees and creating canopy gaps. Fallen pines may be left where they fall as they shelter seedlings, except where they are a hazard to track users.

A number of conditions in the reserve are conducive to the development of an indigenous canopy to replace the pine forest over time:

- An existing seed bank under the pines, shelter under the trees for seedlings and light wells where trees have fallen.
- Neighbouring areas outside of the reserve have a cover of indigenous species (see Figure 5), including Colonial Knob Scenic Reserve to the north
- Presence of birds to disperse seeds from these neighbouring areas.

Weeds that inhibit natural succession and restoration will need to be monitored. In places where the understory is sparse, less than 1 metre high or has less understory diversity, the natural restoration process may be supplemented with additional planting. Additional enrichment planting of indigenous canopy and podocarp species will also accelerate the succession process.

- Existing light wells where pines have fallen, died or been removed with an emerging or established canopy of indigenous species
- Areas outside the reserve with naturally regenerating indigenous plant species and seed source
- Gullies within the pine canopy with a 2-3m+ indigenous understory



Figure 5 - Areas with natural regeneration of indigenous plant cover in light wells within the pine forest and neighbouring areas with a seed source for indigenous plants



Natural revegetation on pine forest edge



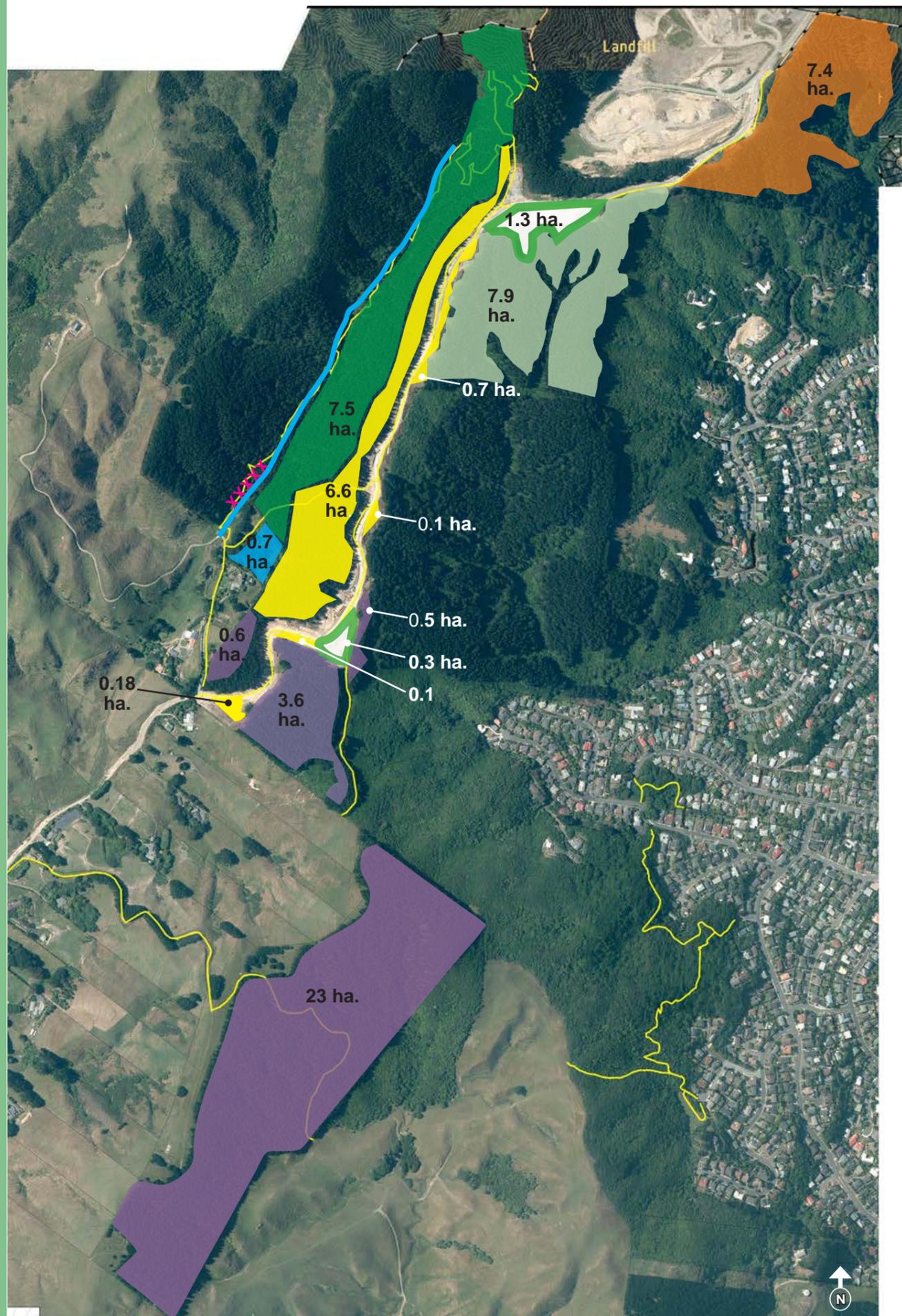
Light well with indigenous vegetation in pine forest



Understorey in pine forest east of Ohariu Stream



Logs blocking track after pine clearance



Vegetation management areas

Replace the pine canopy over time (7.9 hectares)

- Fell or chemically treat pine trees on the edges of the light wells. Remove weakened and fallen pine when they are near tracks for the safety of track users. Where access for recreation is unlikely within the next six years, pines can be left where they fall
- Plant indigenous species where trees are removed to speed up the succession process
- Where weeds are an issue, remove and plant gaps with ground cover and sub canopy species
- In some sheltered locations plant indigenous canopy enrichment tree species. Neighbouring Rangituhi / Colonial Knob Scenic Reserve has stands of tawa and kohekohe and seedlings are already appearing naturally within the reserve. Podocarp species are not common within the scenic reserve which will mean a limited seed source and enrichment planting will increase diversity in the reserve and be a future seed source.

Retain and manage as open grass field (1.6 hectares)

Retain and manage the pine canopy in the short to medium term (7.5 hectares)

The aim is to give track users a variety of experiences as they pass through the sheltered and enclosed pine forest in contrast to the openness of Rangituhi / Colonial Knob and the ridgelines of the Outer Green Belt. Tracks through the forest will need to be monitored and assessed, especially after storms, and branches or trees removed. Where trees are removed from track edges for safety, gaps created should be replanted with indigenous species and wilding and juvenile pines removed. In this way the pine forest will gradually be replaced over time.

Retain and manage the pine canopy as a buffer between the landfill and Tawa (7.4 Hectares)

On landfill closure (in approximately 2036) replace the pine canopy over time by felling or chemically treating pine trees on the edge of light wells to increase their size over time.

Harvest the pine forest and replant using indigenous species (27.7 hectares)

Areas with a closed canopy, more sparse and low indigenous understorey. Pine needle ground cover inhibits establishment of an understorey. These areas are close to a road or track where logs can be transported and harvesting without damaging existing areas of regenerating indigenous plants, streams or wetlands.

Harvesting the pine plantation, planting in indigenous plants and managing regeneration of native species, will extend neighbouring regenerating areas and contribute to coherence and continuity of the pattern of indigenous plant cover.

The three areas next to the road running through the reserve could be harvested in conjunction with harvesting of the adjacent and private Forest of Tane.

Control wilding pines, plant indigenous species, once established plant indigenous enhancement species, monitor and remove weeds when they are threatening the establishment of indigenous species (7.68 hectares)

Open areas, and along Spicer Forest Road above battered slopes to shade out weeds on battered slopes. Planting will also reduce the visual prominence of the road.

Remove and manage existing weeds, fill gaps by planting with indigenous riparian species to help prevent weed regrowth and weeds spreading down the catchment, on-going weed control, monitoring of weeds and planting to fill gaps (2.2 hectares)

X Along Ohariu Stream and wetlands.

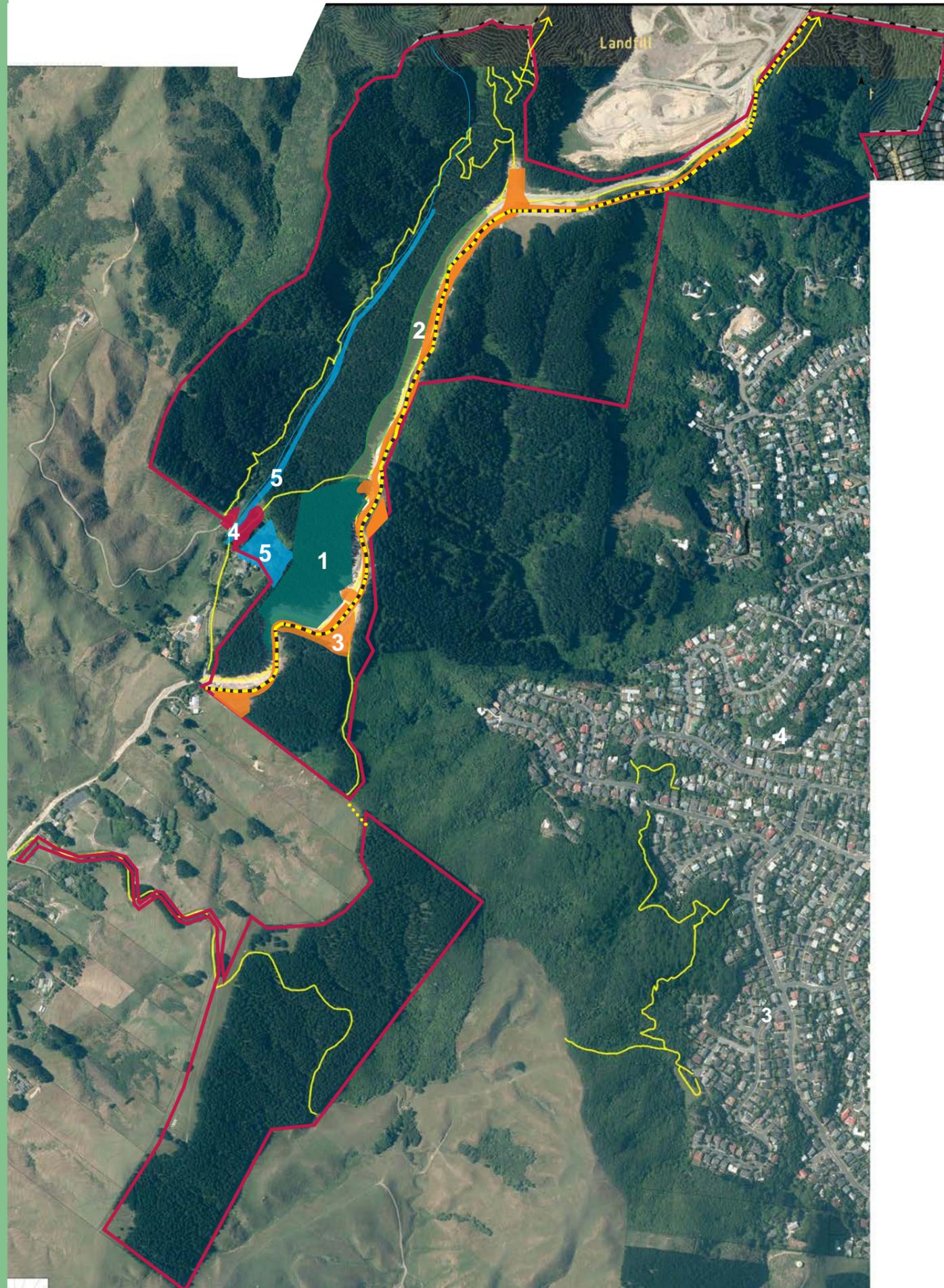
Figure 6 - Vegetation management areas (approximate area in hectares)

Planting List

Botanical Name	Common Name	Category	Riparian/ Valley/Gully Planting	1 - 3 year Planting	Enhancement	Area to be planted (See Figure 6 for colour codes)
<i>Aristotelia serrata</i>	Wineberry	tree	✓	✓		■ ■ ■ ■ ■
<i>Austroderia fulvida</i> (formerly <i>Cortaderia fulvida</i>)	Toetoe	shrub	✓			■ ■ ■
<i>Beilschmiedia tawa</i>	Tawa	tree			✓	■ ■ ■ ■ ■
<i>Brachyglottis repanda</i>	Rangiora	shrub	✓	✓		■ ■ ■ ■ ■
<i>Carex secta</i>	Purei, Makura	sedge	✓			■ ■ ■ ■ ■
<i>Carex solandri</i>	Solander's Sedge	sedge	✓			■ ■ ■ ■ ■
<i>Carex uncinata</i>	hook grass	sedge		✓		■ ■ ■ ■ ■
<i>Carpodetus serratus</i>	Putaputaweta	tree			✓	■ ■ ■ ■ ■
<i>Coprosma grandifolia</i>	Kanano	shrub/small tree		✓		■ ■ ■ ■ ■
<i>Coprosma rhamnoides</i>	Mingimingi, red fruited karamu	shrub		✓		■ ■ ■ ■ ■
<i>Coprosma robusta</i>	Karamu	shrub		✓		■ ■ ■ ■ ■
<i>Coprosma rotundifolia</i>	Round-leaved Coprosma	shrub		✓		■ ■ ■ ■ ■
<i>Cordyline australis</i>	Ti kōuka, Cabbage tree	tree		✓		■ ■ ■ ■ ■
<i>Dacrycarpus dacrydioides</i>	Kahikatea	large tree			✓	■ ■ ■ ■ ■
<i>Dacrydium cupressinum</i>	Rimu	large tree			✓	■ ■ ■ ■ ■
<i>Dysoxylum spectabile</i>	Kohekohe	tree			✓	■ ■ ■ ■ ■
<i>Fuchsia excorticata</i>	Kotukutuku	tree	✓			■ ■ ■ ■ ■
<i>Geniostoma ligustrifolium</i> var. <i>ligustrifolium</i>	Hangehange	shrub/shade	✓	✓		■ ■ ■
<i>Griselinia littoralis</i>	Kapuka, broadleaf	tree		✓		■ ■ ■ ■ ■
<i>Hebe stricta</i>	Koromiko	shrub	✓	✓		■ ■ ■ ■ ■
<i>Hedycarya arborea</i>	Pigeonwood	tree	✓		✓	■ ■ ■ ■ ■
<i>Knightia excelsa</i>	Rewarewa	tree			✓	■ ■ ■ ■ ■
<i>Kunzea robusta</i>	Kanuka	tree		✓		■ ■ ■ ■ ■
<i>Leptospermum scoparium</i> var. <i>scoparium</i>	Manuka	tree		✓		■ ■ ■ ■ ■
<i>Lophomyrtus bullata</i>	Ramarama	bush		✓		■ ■ ■ ■ ■
<i>Melicytus ramiflorus</i>	Mahoe	tree	✓	✓		■ ■ ■ ■ ■
<i>Metrosideros robusta</i>	Northern rata	large tree			✓	■ ■ ■ ■ ■
<i>Muehlenbeckia australis</i>	Pohuehue	vine		✓		■ ■ ■ ■ ■
<i>Myrsine australis</i>	Red Matipo	tree	✓	✓		■ ■ ■ ■ ■
<i>Olearia solandri</i>	Coastal shrub daisy	shrub		✓		■ ■ ■ ■ ■
<i>Ozothamnus leptophyllus</i>	Tauhini	shrub		✓		■ ■ ■ ■ ■
<i>Pennantia corymbosa</i>	Kaikomako	tree		✓		■ ■ ■ ■ ■
<i>Phormium cookianum</i>	Harakeke/Flax	monocot		✓		■ ■ ■ ■ ■
<i>Piper excelsum</i> subsp. <i>excelsum</i>	Kawakawa	bush	✓	✓		■ ■ ■ ■ ■
<i>Pittosporum eugenioides</i>	Tarata	tree		✓		■ ■ ■ ■ ■
<i>Pittosporum tenuifolium</i>	Kōhūhū	tree		✓		■ ■ ■ ■ ■
<i>Podocarpus totara</i>	Totara	large tree			✓	■ ■ ■ ■ ■
<i>Prumnopitys ferruginea</i>	Miro	large tree			✓	■ ■ ■ ■ ■
<i>Prumnopitys taxifolia</i>	Matai	large tree			✓	■ ■ ■ ■ ■

Botanical Name	Common Name	Category	Riparian/ Valley/ Gully	Years 1-3 Planting	Enhancement	Area to be planted (See Figure 6 for colour codes)
<i>Pseudopanax arboreus</i>	Fivefinger	tree	✓	✓		
<i>Schefflera digitata</i>	Pate	tree	✓	✓		
<i>Solanum laciniatum</i>	Poroporo	shrub	✓	✓		
<i>Sophora microphylla</i>	Kowhai	tree		✓		

Priority areas for weed control



- 1** Where the pine cover has been cleared
Key weeds - wilding pines, gorse, blackberry, Himalayan honeysuckle
- 2** In area planted after pine tree removal (2016 June planting)
- 3** Along the edge of Spicer Forest Road on batter slopes and above the batter slopes
Key weeds - wilding pines, gorse, blackberry, Himalayan honeysuckle.
- 4** At the reserve entrance at the top of Ohariu Valley Road
Key weeds - gorse, blackberry, Himalayan honeysuckle.
- 5** Ohariu Stream and wetlands
Key weeds - wilding pines, gorse, blackberry, Himalayan honeysuckle.



Weeds above battered slope along road



Wilding pines



Leycesteria formosa at pine forest edge



Plectranthus ciliatus at pine forest edge



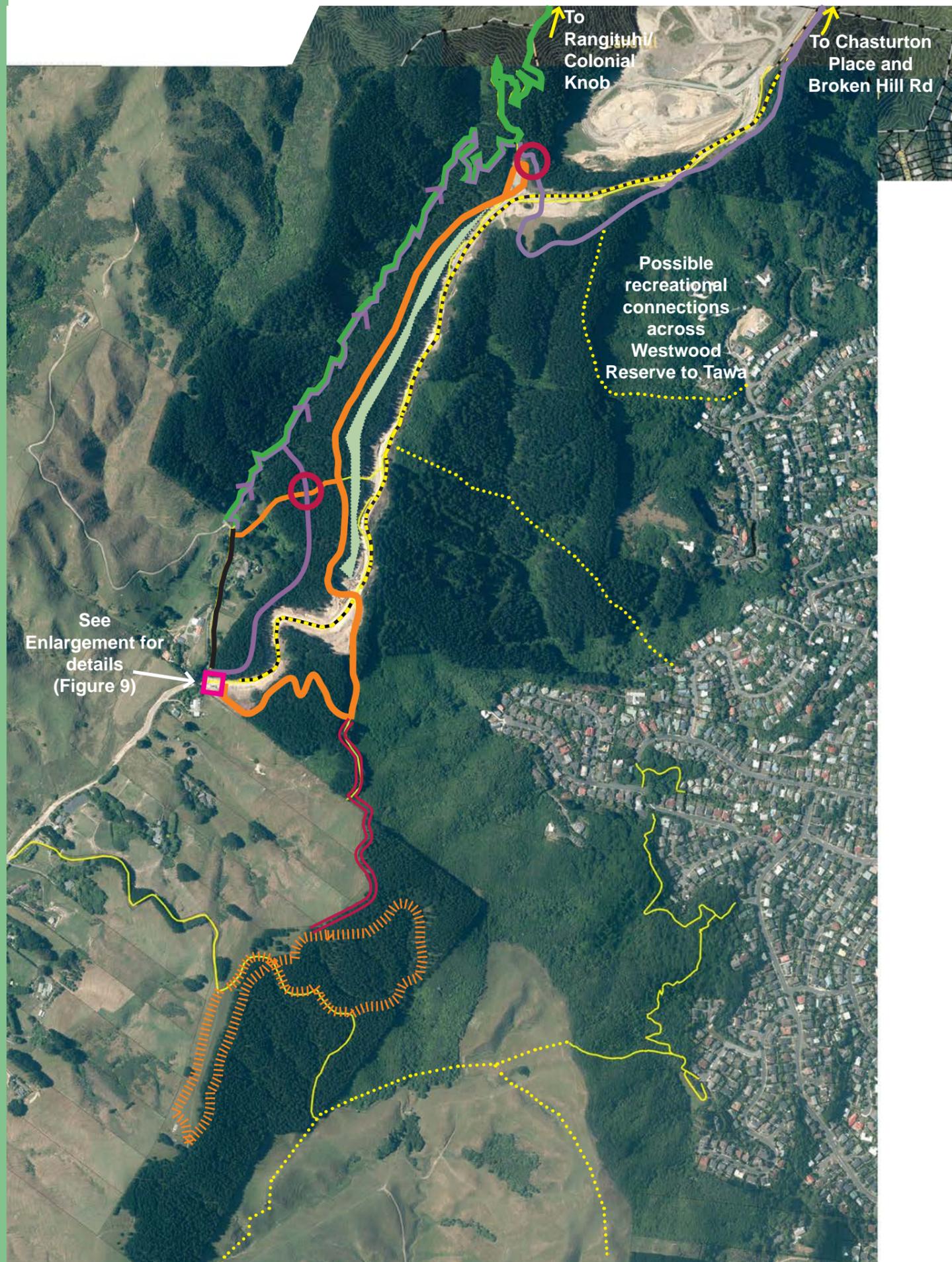
Blackberry colonising open space



Blackberry where Te Araroa Trail crosses Ohariu Stream

List of main weeds, locations, control, priority

Botanical Name	Common Name	Locations	Control	Priority for control (From 1-3 with 1 the highest priority)
<i>Apium nodiflorum</i>	Water celery	Along stream/wet areas	Controlled manually by hand pulling or chemically by spraying. Regrowth sprayed and the area planted with species that create shade. Needs constant work to eradicate.	3
<i>Clematis vitalba</i>	Old man's beard	Identify and monitor	Controlled chemically by slashing thick stems at 1 m and at ground level and treat stumps. Leave dead material hanging above ground. Check 6 monthly for regrowth and spot spray seedlings. Plant as soon as practical NB Generally, control is needed for the first two years before planting as spot spraying can be difficult around planted sites.	1
<i>Commiphora opobalsamum</i>	Balm of Gilead	Along stream/wet areas	Controlled manually by digging out or chemically by spraying and the area planted with species that will create shade.	3
<i>Erythranthe guttata</i>	Monkey musk	Along stream/wet areas	Controlled manually by hand pulling or chemically by spraying. Regrowth sprayed and the area planted with species that will create shade. Needs constant work to eradicate.	3
<i>Gunnera tinctoria</i>	Chilean rhubarb	Along stream on the west bank	Spray and remove.	1
<i>Leycesteria formosa</i>	Himalayan honeysuckle	Along Ohariu Stream and throughout the site especially along tracks	Removed by digging out and left to rot down or cut down and the stump painted, or sprayed in spring/summer. Replant sites to prevent recovery and check for re sprouting.	2
<i>Pinus radiata</i>	seedling (wilding) pines	Over whole site, but especially where pines have been cleared, along the edges of Spicer Forest Road and in light wells	<p>Areas of low infestation:</p> <p>Hand-weeding - Small wilding pines pulled or eased out of the ground. Avoid leaving bare soil as will encourage further pine seeds to germinate.</p> <p>Suitable for volunteer labour</p> <p>Areas with medium-size seedlings and still in the 'soft-bark' phase of growth:</p> <p>Chemical control - Ground-based Basel Bark application of Grazon in petroleum-based oil or diesel. Effective year-round. Labour intensive because every stem needs to be treated.</p> <p>Areas where safety or aesthetics of dead standing trees is an issue. For trees up to stem diameter of 30cm:</p> <p>Cut stump method with ground-based basal bark treatment - Stems cut off close to ground level. A basal bark herbicide mix applied to cut stump surface and remaining bark. Can be done at any time of the year.</p>	1
<i>Plectranthus ciliatus</i>	African spur flower, purple-leaved plectranthus	At the edge of the pine forest and where the pine cover has been disturbed	Pull up, dispose of, burn or bury, chemical control (all year round) - glyphosate, metsulfuron-methyl or triclopyr. Cover with a weed mat and leave for 3-6 months. Follow up within 3-6 months and replant bare sites.	2
<i>Phytolacca octandra</i>	Inkweed	At the edge of the pine forest and where the pine cover has been disturbed	Control within areas of new plantings for the first 2 years as the weed competes with plants. Cut (stump treat if needed) using metsulfuron-methyl.	3
<i>Rubus fruticosus</i>	Blackberry	Large clumps along Ohariu Stream, on east side of Te Araroa Trail where it joins Ohariu Valley Road and above battered slopes along the road through the reserve. Single or smaller groups on track edges and in light wells where pines have fallen or been cleared	Will eventually be shaded out. Where control is necessary spray in summer, cut and respray growth (usually a two-year process for large patches). Once a good level of control has been achieved plant densely (generally 4 months after spraying). Weedbusters suggest digging out small patches or scraping the stem or cut stumps and painting with glyphosate.	2
<i>Selaginella kraussiana</i>	African clubmoss	Along stream/wet areas	Wildlands report suggests may not be possible to control and will continue to spread down the stream and on footwear. In small areas it can be pulled out. In larger areas Weedbusters suggests spraying glyphosate with metsulfuron-methyl and penetrant. To stop it returning it should be kept clear from track, especially at tracks ends so it is not moved further into the reserve. Cleared sites should be identified and checked 3-monthly for re-growth as a follow up, possibly 4 times.	3
<i>Ulex europaeus</i>	Gorse	Single or in small groups on track edges and in light wells where pines have fallen or cleared and along the road through the reserve	Indigenous species will usually overtop gorse but control can be sped up by selective slashing, stump swabbing and planting in indigenous species.	3



Track plan

- Te Araroa Trail
- Uphill mountain biking only along a section of Te Araroa Trail
- Road (unformed legal road) shared by walkers, cyclists and and horses
- New horse-riding/walking tracks mainly 2 m wide.
- - - - - 944 Ohariu Block horse-riding/walking tracks. Canter track and horse cross country route are options (to be established with horse riding community)
- Mountain biking and walking
- - - - - Walking and mountain biking along existing road
- = = = = = Future connections (walking, horse riding, mountain biking)
- Location where mountain biking and horse riding tracks meet. The intersection must have very good sight lines, designed to slow bikes, with information on track use.
- / Plant taller trees on the Eastern side of the horse riding track where it runs parallel to the road as a visual buffer to the road through the reserve (fast mountain bikes using the road can startle horses)
- Existing tracks
- - - - - Proposed tracks (as per Sector 1, Open Space Access Plan 2016)

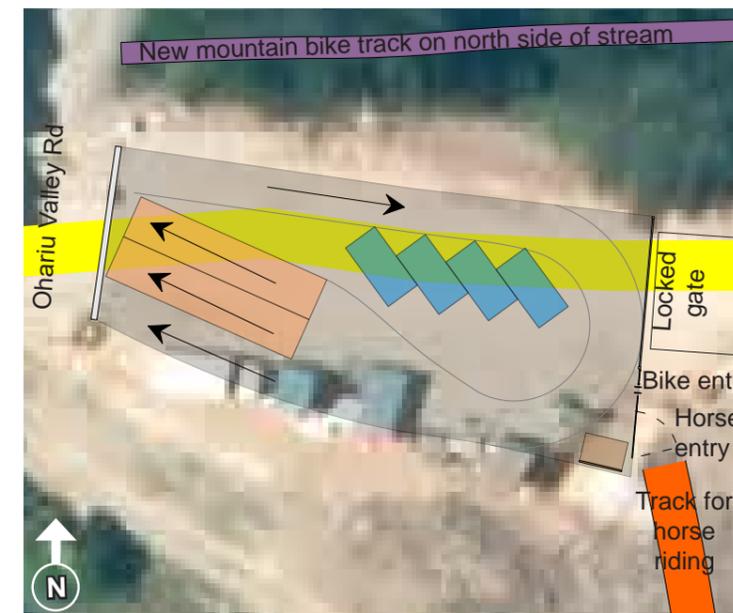


Figure 9 - Vehicle and horse float parking and turning circle

- Parking for horse floats
- Parking for vehicles
- Hitching post and mounting block
- Road through Spicer Forest



View to Porirua Harbour

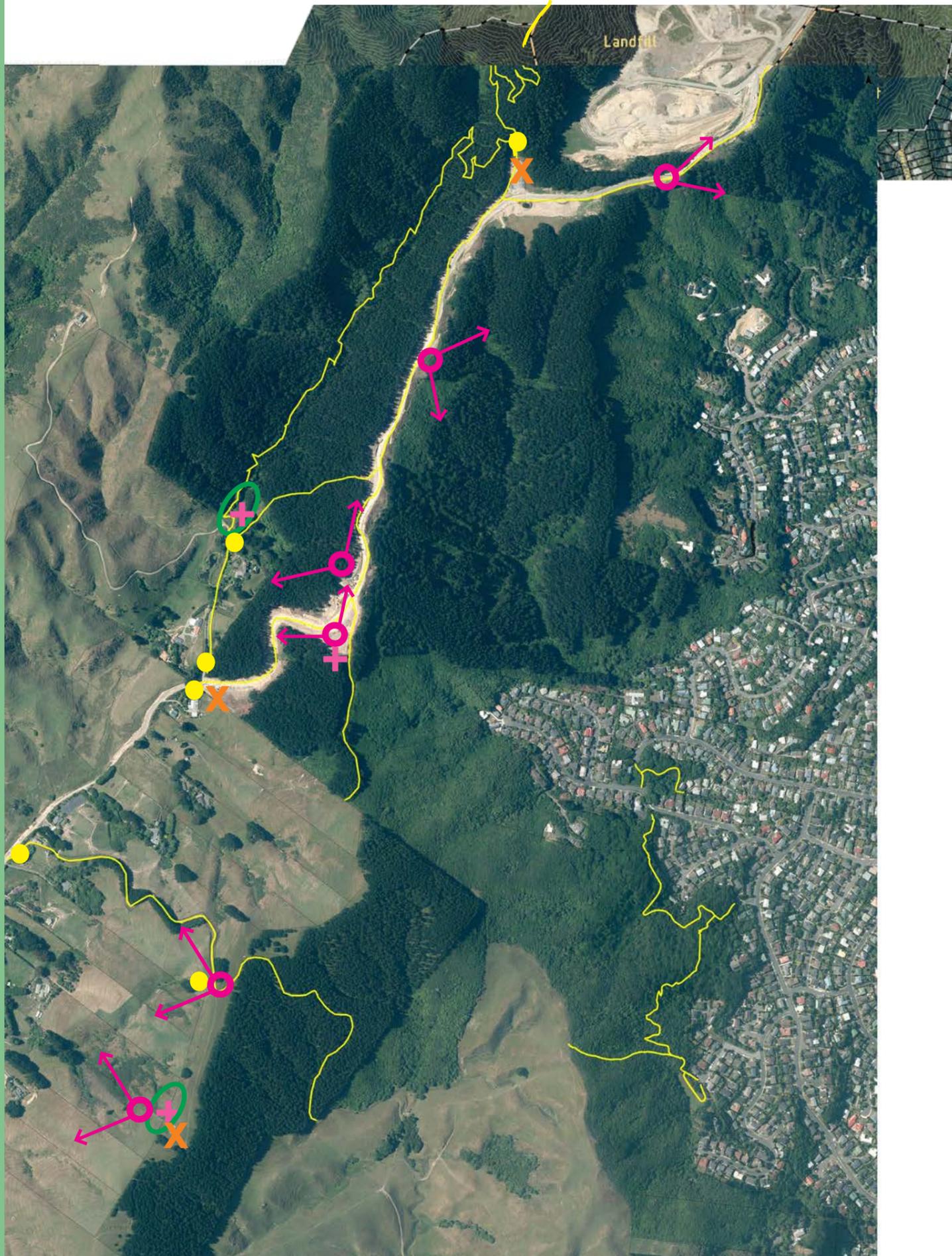


Reserve entrance, parking and gates



Existing trail

Signage, viewpoints, picnic areas, facilities to support track use



- X Hitching posts, mounting block
- Viewpoints - Keep these views open with low planting only
- Sheltered areas for resting and picnicking
- + Seats or picnic tables
- Signs - directional and information. A system of colour-coded signs identifying use at both ends of tracks and where tracks intersect



View to Porirua Harbour



Bike and horse entrance and locked gate



Existing trail

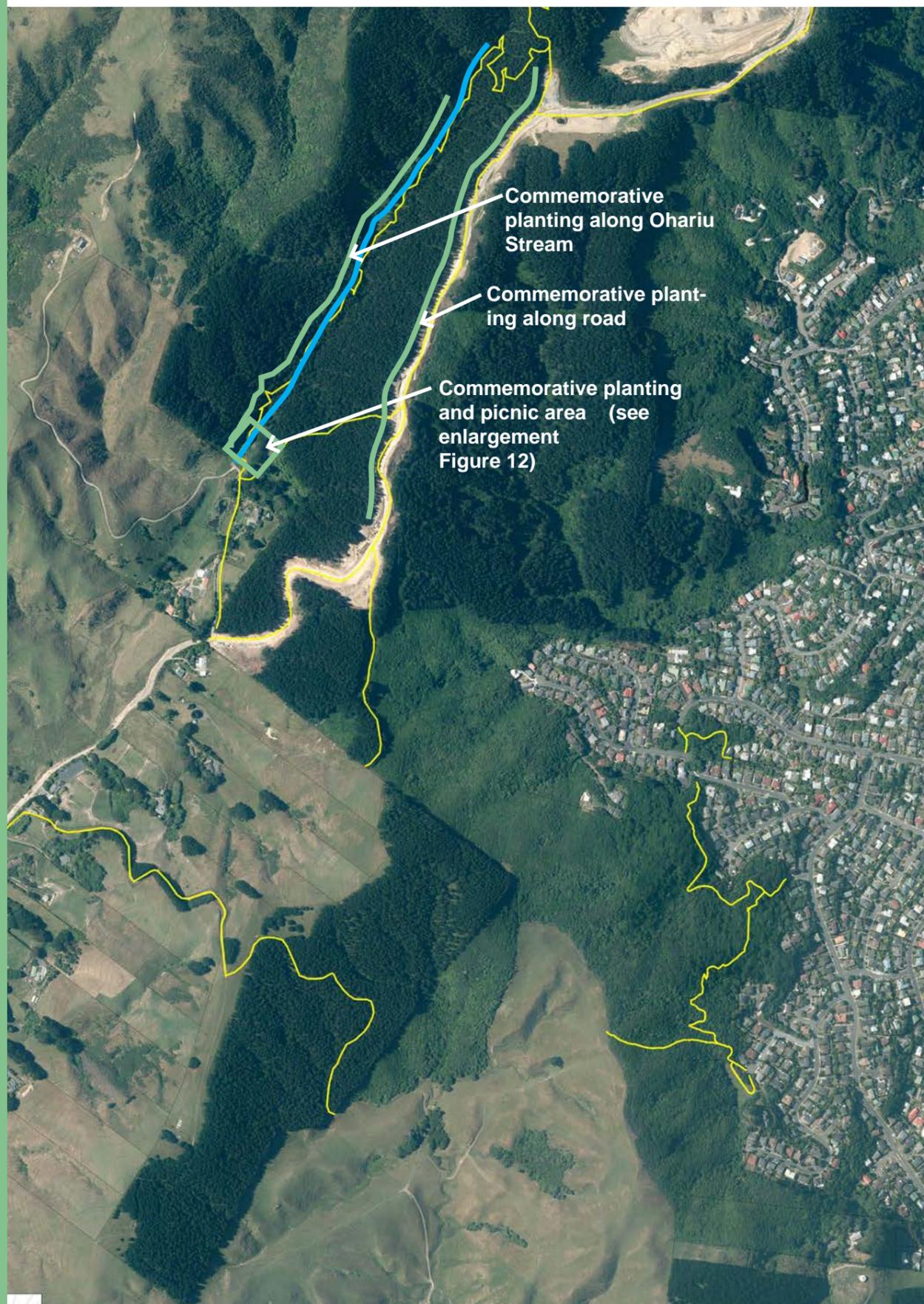
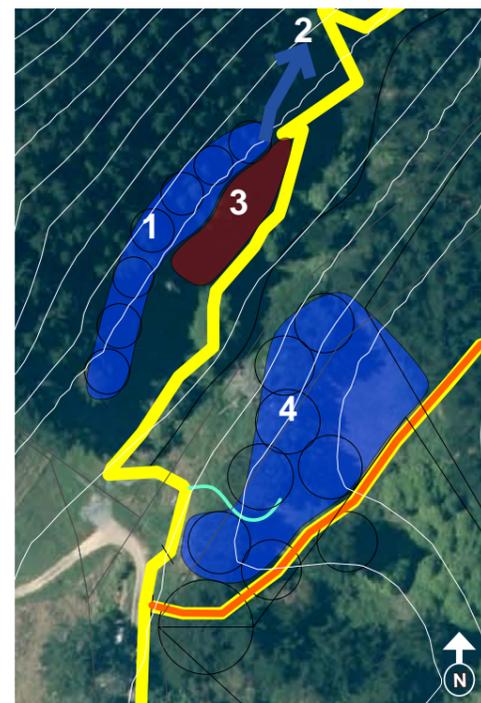


Figure 11 - Locations for commemorative planting

Commemorative planting and picnic area



- 1 Pines to remove and replace with commemorative trees
 - 2 Continue commemorative planting along western side of Te Araroa Trail
 - 3 Existing Dawn redwood trees retained
 - 4 Remove Macrocarpa and pine and replace with commemorative trees, remove blackberry and add picnic table/seats
- Te Araroa Trail (uphill mountain biking)
 - Mountain biking track
 - New connecting path
 - Existing entry and track for horse riding/walking

Figure 12 - Detail of commemorative planting/ picnic area

- Remove Macrocarpa, pines and blackberry from the elevated grass area to the east of Ohariu Stream and replace with commemorative trees. This area is to be developed as a picnic area with picnic table/ seating and a path that links to Te Araroa Trail. The picnic area separates the new mountain bike track and the horse riding track. The mountain bike track exits onto Te Araroa Trail and the track for horse riding enters/exists onto Ohariu Valley Road through the existing gate
- Remove pine trees edging the open grass area west of the stream and replace with commemorative trees
- Plant commemorative trees along the western side of Te Araroa Trail starting north of the existing Dawn redwoods.

Commemorative tree planting list

Botanical Name	Common Name
<i>Dacrycarpus dacrydioides</i>	Kahikatea
<i>Dacrydium cupressinum</i>	Rimu
<i>Metrosideros robusta</i>	Northern rata
<i>Podocarpus totara</i>	Totara
<i>Beilschmiedia tawa</i>	Tawa
<i>Dysoxylum spectabile</i>	Kohekohe
<i>Carpodetus serratus</i>	Putaputaweta
<i>Prumnopitys ferruginea</i>	Miro
<i>Prumnopitys taxifolia</i>	Matai



Existing Dawn redwoods



Elevated area to develop for commemorative planting and picnicking

Implementation

Priority <small>(From 1-5 with 1 the highest priority)</small>	Activity	Page	Rational	Year	WCC Parks Team
1	Track layout and construction: Develop new horse riding track within Spicer Forest (note that timing of zig zag link from car park will depend on forestry and that first priority will be the new track below the existing road). Develop new shared use (bike and walking) track linking car park with Te Araroa Trail	11 11	Track development to bring users into the reserve and connect with the wider track network (trails in Rangituhi / Colonial Knob and tracks starting in Spicer Forest Botanical Park). Development of a looped walking and mountain bike trail uphill along Te Araroa Trail and along the existing road through the reserve, and a connector to Rangituhi/Colonial Knob trail via the ridgeline above Chasturton Place, Spicer Botanical Park and Te Rahui o Rangituhi.	2017/18 2018/19 (following forestry)	Assets Assets
1	Assess trees near tracks and fell as necessary. Leave fallen trees in place unless they interfere with track use. Monitor gaps for weeds (including pine seedlings), remove and replace with indigenous species as necessary.	11	Safety of track users in areas where the pine forest is managed for recreation. Trees left where they fall provide shelter for natural regeneration of indigenous plants. Weeds may inhibit natural regeneration of indigenous plants which will replace pine canopy over time. Existing indigenous understorey should colonise gaps. If not, planting will reduce weeds re-establishing.	2016 ongoing 2016 ongoing	Tree team
1	Monitor weeds and plant gaps as necessary in 2016 June planting site.	6-8	Support establishment of indigenous plant cover as soon as possible to reduce weeds.	2016 ongoing	Urban ecology
1	Signage - reserve, directional, information, use.	12	Support reserve and track use and clearly indicate where mountain biking and horse riding are separated for safety and for enjoyable recreational experiences.	2017/2018	Assets
1	Hitching posts, mounting blocks.	12	Facilities to enhance enjoyment and support use by the horse-riding community	2018/2019	Assets
1	Forestry: harvest 4.2 Ha of pine forest within Spicer Forest with access for log transportation without damaging existing areas of regenerating indigenous plants, streams or wetlands (see Figure 6 for areas). Replant using indigenous species.	6 7-9	Receive income from pine harvesting and use for replanting.	2017/18	Tree team
2	Parking/turning circle at exit Spicer Forest Road.	11	Organise parking and improve access.	2018/2019	Assets
2	Track layout and construction: Develop shared use (walking and biking) track to Chasturdon Place and Broken Hill Road	11	Track development to bring users into the reserve and connect with the wider track network (trails in Rangituhi / Colonial Knob and tracks starting in Spicer Forest Botanical Park).	2019/2020	Assets

Priority (From 1-5 with 1 the highest priority)	Activity	Page	Rational	Year	WCC Parks Team
2	Control wilding pines, plant indigenous plant species in open areas along Spicer Forest Road and above batter.	6-8	Establish an indigenous plant canopy to reduce impacts of wilding pines.	2016 ongoing	Ops
2	Plant taller species between Spicer Forest Road and the horse trail.	11	Reduce sight lines to the road from horse trail for safety.	2016 ongoing	Urban ecology
2	Begin commemorative tree planting to west of road	13	Beautification and continuation of commemorative tree planting programme	2018 ongoing	
3	Remove blackberry from entrance to the reserve and Te Araroa Trail where the trail leaves Ohariu Valley Road. Plant indigenous riparian species to help prevent blackberry recolonising.	6,10 7-9	Weed control, improve amenity at entrance.	2017 ongoing	Ops Urban ecology
3	Remove pines/macrocarpa/blackberry from commemorative tree planting/picnicking area. Begin commemorative tree planting. Add picnic tables/seats.	6 13 12	Reduce weeds spreading. Improve amenity. Facilities to attract and complement trail use.	2018/2019	Assets & Ops
3	Develop canter track and cross country jumps in the airfield and adjacent pine forest in collaboration with the Ohariu Valley horse-riding community.	11	Extend local facilities for horse riding. This is subject to obtaining a link across private land and forestry.	tbc	
4	Weed control and riparian indigenous planting along Ohariu Stream.	9 7-8	Help prevent weeds spreading down the catchment.	2018 ongoing	Urban ecology
4	Commemorative tree planting on western side of Te Araroa Trail.	8/13		2019 ongoing	
4	Weed control in wetland east of commemorative tree/picnic area.	9,10	Wetland restoration and weed control.	2018 ongoing	Urban ecology
4	Fell or chemically treat pine trees on the edge of existing light wells in pine canopy where there is an existing diverse indigenous understorey of more than 1 metre and near seed sources (for locations see Figure 6).	6	Replace pine forest over time without the need for extensive planting	2019 ongoing	Tree team

Priority (From 1-5 with 1 the highest priority)	Activity	Page	Rational	Year	WCC Parks Team
4	Plant gaps in indigenous plant species. Monitor for canopy tree species and plant if they are not occurring naturally.	7-9 7-9	Increase diversity of tree species by enhancement planting if canopy tree species are not establishing naturally.	2019 ongoing	Urban ecology
5	Harvest 944 Ohariu Valley Road pine forest with access for log transportation without damaging existing areas of regenerating indigenous plants, streams or wetlands (see Figure 6 for areas). Replant using indigenous species.	6 7-9	Receive income from pine harvesting and use for replanting.	2024/2026 2024 ongoing	Tree team Urban ecology

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