

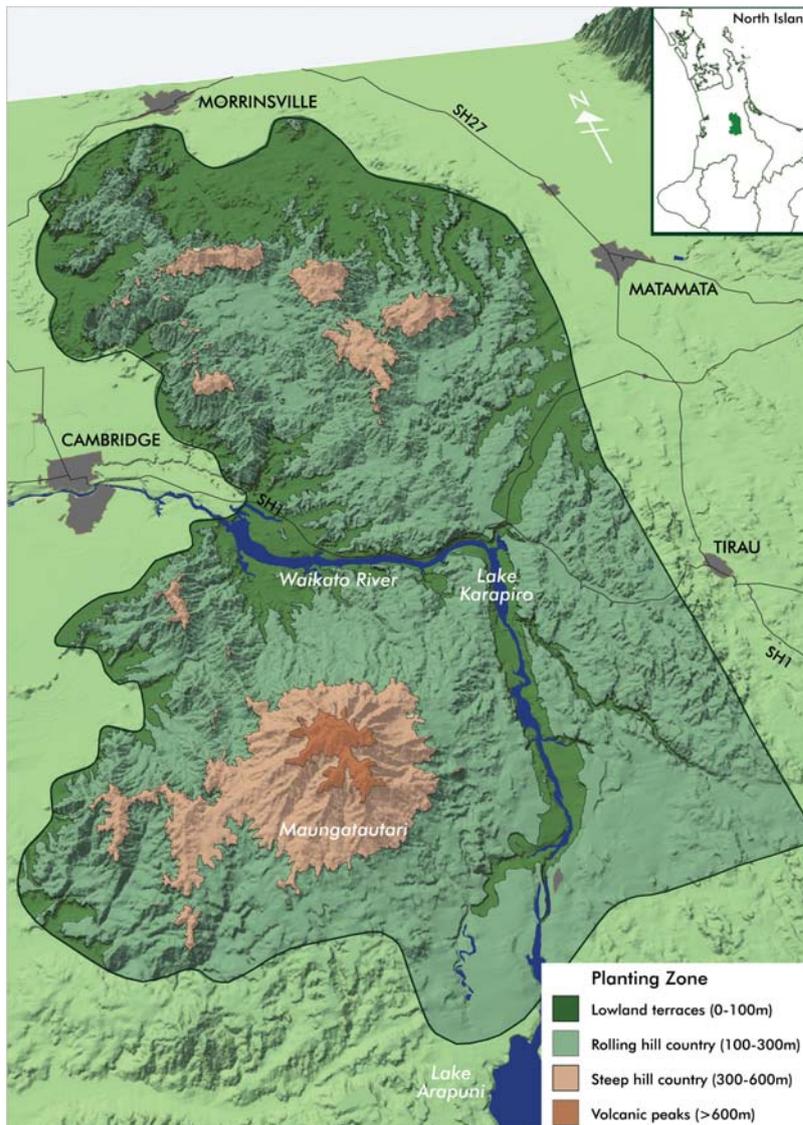
Planting guide

What should I plant?

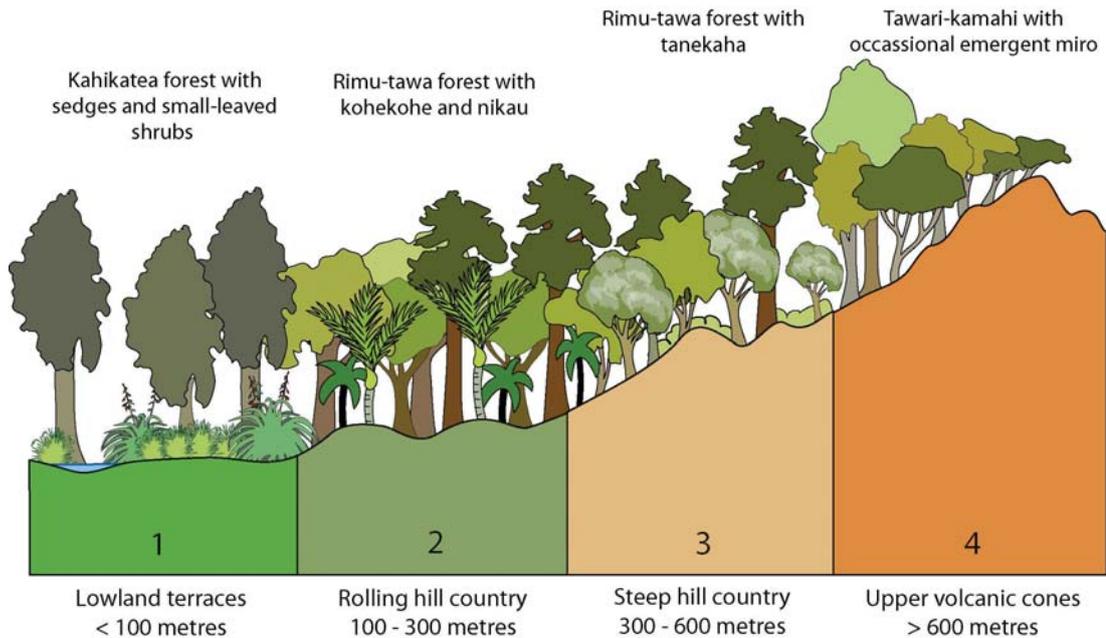
In this guide we describe four separate zones, representing the different vegetation types that would have historically clothed the land.

Use the map and zone descriptions to find out which zone you are in.

A list of plants that are best suited to each site is included, separated into planting sequences. These provide a list of trees, shrubs and climbers that grow naturally in Maungatautari ecological district.



If you are unsure where your property is on this map you may need to consult a topographic map. Read the zone descriptions on the following pages to help determine which zone you are in.



Planting zones - plant the right species for your zone

Plants to avoid

There are a number of native plants that do not naturally occur in the Maungatautari ecological district. We recommend you avoid planting these - particularly in restoration areas, as they could be a threat to the ecological integrity of the area. Some species may do exceedingly well and become weeds, eventually taking over your site. We also recommend avoiding the use of cultivars and nursery hybrids. These lack genetic diversity and do not occur naturally.

Some examples of non-local species are:

kauri, *Agathis australis*
native beech, *Nothofagus spp*

pohutukawa, *Metrosideros excelsa*
puriri, *Vitex lucens*

We do not include any non-native plants in this guide. While some exotic plants are popular food sources for native birds they can become problem weeds. For example flowering cherry (*Prunus campanula*) is beginning to invade natural areas in the district.

Where can I find quality plants?

You can grow your own plants, transplant self-seeded ones (not garden escapees) that are unwanted (for example, under pine forests or along fencelines), or buy them from a reputable native plant nursery. See the factsheet "Planting natives in the Waikato region" for more information on growing, collecting, buying and planting native plants.

Here are some native plant nurseries that may have plants sourced from Maungatautari ecological district. Ask for eco-sourced plants (those collected from local naturally occurring native plants). In addition to planting, you can try spreading seed or forest litter from a similar site into an existing stand to encourage regeneration. Check the seedlings for weed species like privet and climbing asparagus. Ask permission from the landowners before collecting seed or forest litter.

Local community nurseries

Lesley Fitzgerald and Jenny Oliphant
 Pokaiwhenua Tree Farm
 530 Arapuni Rd
 RD1
 Putaruru
 (07) 883 5763

Peter Morris
 Matangi
 (07) 829 5763

Commercial nurseries

Full Boom Flora Nurseries Ltd
 524 Morrinsville Rd
 Hamilton
 (07) 856 4515

Hamilton Nurseries Ltd
 Trading as Cambridge Nurseries Ltd
 183 Maungatautari Rd
 Cambridge
 (07) 827 4105

Naturally Native NZ Plants
 30 Gamman Mill Rd
 RD3, Tauranga
 0800 334 456

Taupo Native Plant Nursery
 PO Box 437, Taupo
 (07) 378 5450

Annton Nursery
 Hamilton Road
 Cambridge
 (07) 827 4144

Plan ahead!

Many species in the planting lists are not readily available from commercial nurseries.

Nurseries may be prepared to source and grow these for you, but will need a good lead in time (2-3 years).

1. Lowland terraces (<100m)

This zone is predominantly in the north of the district, around KIWITAHĪ, with a narrow band extending around the eastern perimeter through the Piarere valley to Lake Karapiro, and along the Waikato River terraces from Arapuni to Cambridge.

The land is flat or gently sloping lowland terraces below 100m altitude. The alluvial soils have low natural fertility and tend to be boggy in low-lying areas.



Typical original vegetation would have been conifer forest and swamps. Kahikatea and pukatea were the dominant forest trees on boggy floodplains. On wet ground common understorey and ground layer species were swamp maire, kiekie, supplejack and the giant sedge *Gahnia xanthocarpa*.

On drier sites, common understorey and ground layer species were small leaved trees and shrubs like kaikomako and turepo. On higher ground totara, matai and rimu were more abundant. For best results, plant the species appropriate to the drainage conditions of your site - wetlands in very wet sites, kahikatea on seasonally flooded areas and rimu-totara on drier slopes.

A number of these remnants are visible from SH 29 through the Piarere Valley.

1a) Flat, damp areas

Kahikatea trees can be planted in the open except in very frosty areas. They will reach 2 m in 3-5 years, but do not develop a closed canopy for decades. To deter weeds you may wish to densely plant with flax or native sedges (for example, *Carex secta*). Plant mostly kahikatea trees at distances from 1-5 m apart (vary the distances to achieve a natural pattern). Plant a few other tree species on drier sites and around the edges, including matai, rimu and totara. Cabbage trees and sedges like pukio can be planted in wet depressions (build 30 cm high mounds to plant into).

After about three years, interplant with shrubs. Plant mostly thin leaved coprosma, round-leaved coprosma, kaikomako, poataniwha, small-flowered mahoe, turepo, and a few mahoe, pate, putaputaweta and hangehange. Ferns and treeferns should arrive on their own. If you have very wet depressions you can plant pukatea and swamp maire. Plant a few black maire and pokaka around the edges.

In very wet sites use Environment Waikato's wetland planting guide (contact 0800 BIODIV or visit www.ew.govt.nz).

1b) Rolling hills and dry river banks

Mixed conifer forest can also be planted directly, as totara and rimu can be planted in the open. This forest type should be more mixed than the kahikatea forest.

Plant a mixture of totara, matai and a few rimu, with kanuka and mapou in the first few years. Space the bigger trees about 5-10 m apart, with kanuka and mapou in between at 2-3 m. After three years, interplant with lots of bigger leaved plants like mahoe, kawakawa and hangehange. When the canopy is well over-head and closed-in, plant tawa, pate, titoki and pukatea (in wetter sites). Plant mostly totara on dry river terraces, with tree fuchsia, kowhai, titoki and lowland ribbonwood (manatu) along river banks.

1c) Specimen trees and garden plants

If you don't wish to replant an area of forest, consider the following plants to help enrich this zone. Use them in fenced off streamside areas, shelterbelts and for stock shade trees.

Large trees	Small trees	Shrubs
Kahikatea	Cabbage tree	Flax
Totara	Poataniwha	Swamp astelia
Rimu	Turepo (milk tree)	Thin-leaved coprosma
Pukatea	Mahoe	Round-leaved coprosma
Pokaka	Mapou	Karamu
Matai	Kowhai	

See the district plant list at the end of this document for more species to plant in this zone



Lowland terraces planting zone

2. Rolling hill country (100-300m)

This is the largest zone in the ecological district. It includes the rural districts of Pukemoremore, Richmond Downs, Te Miro, Whitehall, Maungatautari, Horahora, Kairangi and Puketurua.

The land is low, rolling hill country from 100-300 m, with moderate to steep slopes. The soils, formed from volcanic ash, have low to moderate natural fertility and are generally well-drained. The climate is generally mild, and summer drought may be a problem, so plant frost-hardy plants in autumn.



Rimu-tawa forest was the typical vegetation in this zone. Rimu, miro, totara and northern rata emerged over a canopy dominated by tawa with mangeao, rewarewa, titoki, pukatea, hinau and kohekohe. The understorey was thick with a variety of small trees, shrubs, vines, ferns and grasses such as kawakawa, mahoe, pigeonwood, passion vine, nikau, silver fern and the ground lily *Astelia fragrans*.

Remaining examples of this vegetation type include Junction Scenic Reserve, the lower slopes of Te Tapui Scenic Reserve and Sanatorium Hill. A good example of natural regeneration can be seen at the Waterworks site on Waterworks Road.

This zone can be further separated according to topography - ridges and spurs, slopes, gullies and bush edges. The species list at the end of this document identifies where each plant would naturally occur. For best results plant the species appropriate to the topographic position of your site.

These forest types are usually best established through a dense nurse crop of tea-tree and hardy shrubs. Plant scattered rimu, miro, totara and rewarewa (5-10 m apart) among closely planted manuka, mapou and mingimingi. Plant mahoe, pigeonwood, kawakawa, kanono, hangehange, mangeo, titoki, pukatea and silver fern after 3 years. Plant tawa, kohekohe and nikau much later, under overhead, dense canopy (10-15 years). Plant mostly tawa, mangeao and kohekohe (about 5-10 m apart), with pukatea in wet gullies and scattered titoki on slopes. Plant nikau, kawakawa and hangehange densely (1-2 m spacing).

2a) Ridges and spurs

These should be planted with mostly small or tough-leaved plants like rimu, totara, rewarewa and occasional rangiora, heketara, miro and tanekaha. Understorey plants would include mingimingi, and the lily *Astelia fragrans* on the ground.

2b) Slopes

Slopes should eventually have a canopy of mostly tawa, mangeo and kohekohe (spaced about 5-10 m apart) over a dense understorey of silver fern, kawakawa, hangehange, nikau, kanono and mahoe. Plant occasional rewarewa, rimu, five-finger (whauwhaupaku) and rangiora.

2c) Gullies

Wet gullies should have pukatea and occasional kahikatea (planted just upslope from streams), with lots of pate, parataniwha, mamaku, wheki, nikau and occasional putaputaweta, cabbage trees and tree fuchsia (on well-lit stream banks).

2d) Bush edges

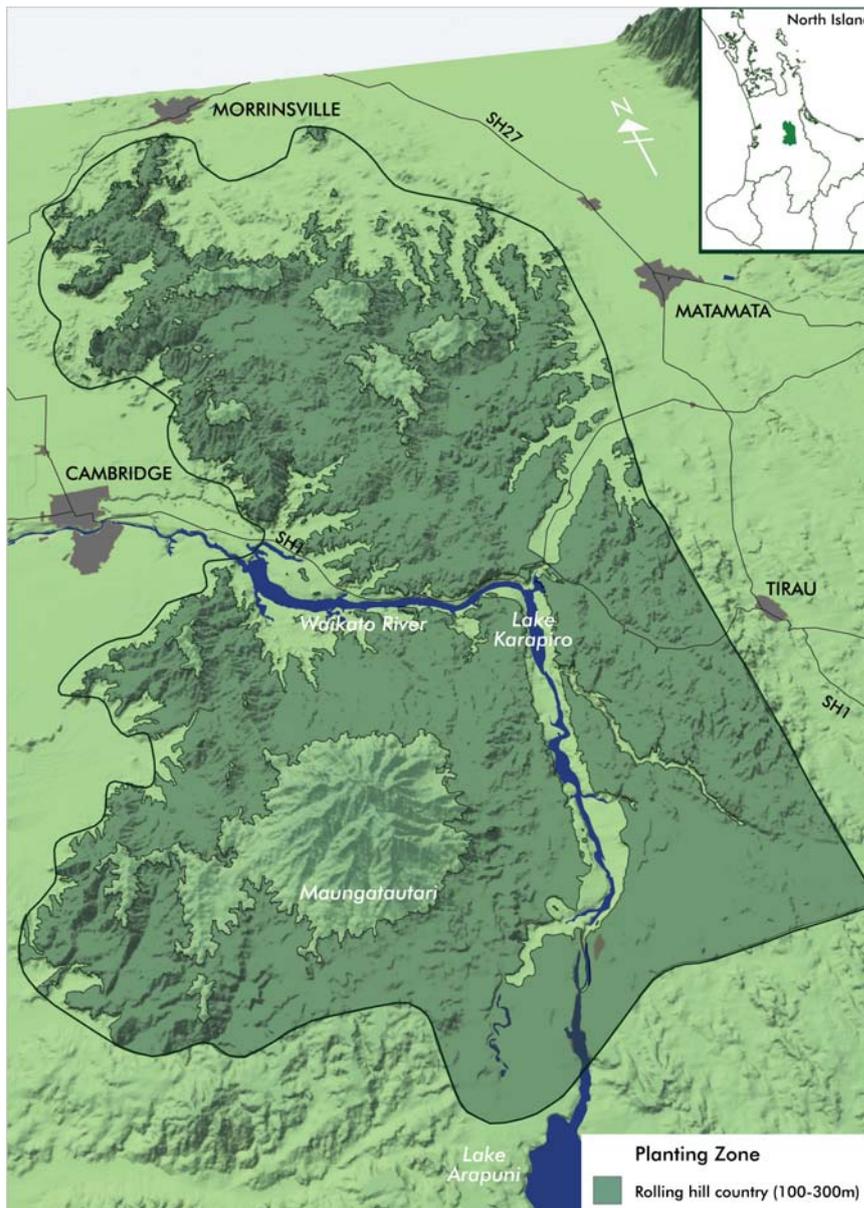
Plant light-tolerant shrub species including manuka, koromiko, five-finger (whauwhaupaku), rangiora, lacebark and wineberry.

2e) Specimen trees and garden plants

If you don't wish to replant an area of forest, consider the following plants to help enrich this zone. Use them in fenced off streamside areas, shelterbelts and for stock shade trees.

Large trees	Small trees	Shrubs
Rimu	Cabbage tree	Koromiko
Totara	Lancewood	Kawakawa
Kamaha	Five-finger	Mapou
Pukatea	Mahoe	Rangiora
Miro		Karamu
Titoki		

See the district plant list at the end of this document for more species to plant in this zone.



Rolling hill country planting zone

3. Steep hill country and lower volcanic cones (300-600m)

This zone is restricted to the peaks of the three volcanic cones in the north of the district, the hill country off Oliver and Redoubt roads and the foothills to the south-west of Maungatautari.

The land is steep to rolling hill country from 300-600 m, and exposed to moderate and severe winds. The soils are generally well-drained, formed either from greywacke or volcanic rocks, with low natural fertility.



Rimu-tawa forest would have been the dominant vegetation in this zone (see zone 2 description for tips on planting rimu-tawa forest), however it would have included canopy species such as tanekaha on ridges, and a greater presence of understorey species such as heketara, rangiora and lowland horopito. Species such as kohekohe and nikau would have been absent from much of this higher altitude zone.

There are good intact examples of this vegetation type on the lower slopes of Maungatautari Mountain Scenic Reserve, and the upper peaks of Te Miro and Te Tapui scenic reserves.

3a) Ridges and spurs

These should be planted with mostly small-leaved or tough-leaved plants like rimu, totara, rewarewa, kamahi, heketara, rangiora and occasional tanekaha and toropapa.

3b) Slopes

Slopes should eventually have a canopy of mostly tawa, kamahi, mangeo and hinau (spaced about 5-10 m apart) over a dense understorey of ponga (silver fern), kawakawa, hangehange, kanono and mahoe. Plant occasional rewarewa, rimu, miro, five-finger (whauwhaupaku), pigeonwood, heketara and rangiora.

3c) Gullies

Wet gullies should have pukatea and occasional kahikatea (planted just upslope from streams), with pate, parataniwha, mamaku, wheki and gully fern.

3d) Bush edges

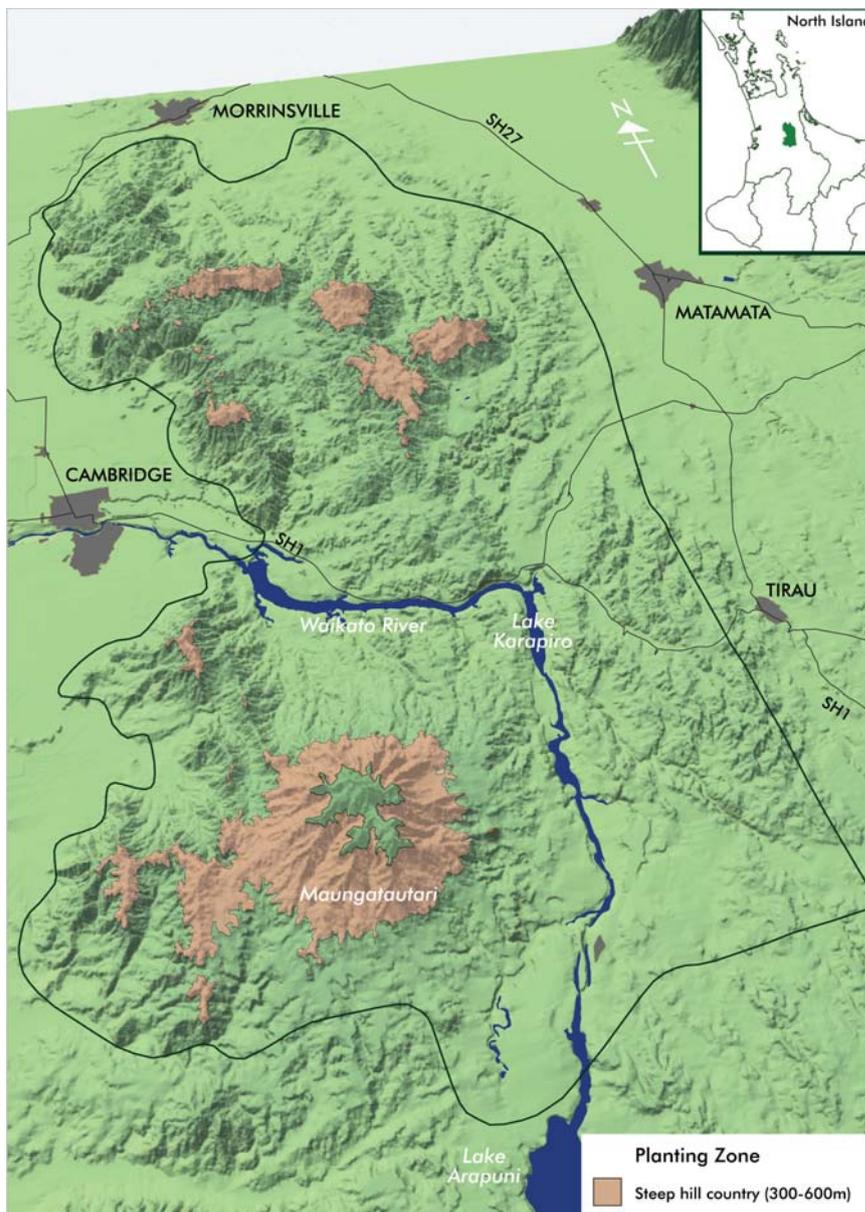
Plant light-tolerant species including manuka, koromiko, rangiora, wineberry and lacebark.

3e) Specimen trees and garden plants

If you don't wish to replant an area of forest, consider the following plants to help enrich this zone. Use them in fenced off streamside areas, shelterbelts and for stock shade trees.

Large trees	Small trees	Shrubs
Rimu	Cabbage tree	Rangiora
Totara	Lancewood	Karamu
Kamahi	Five-finger	Mapou
Pukatea	Mahoe	Heketara
Miro	Hinau	Tauhinu
Rewarewa		Horopito

See the district plant list at the end of this document for more species to plant in this zone.



Steep hill country planting zone

4. Upper volcanic cones (> 600m)

This zone is restricted to the top of Maungatautari mountain, including its three peaks, each above 700 m.

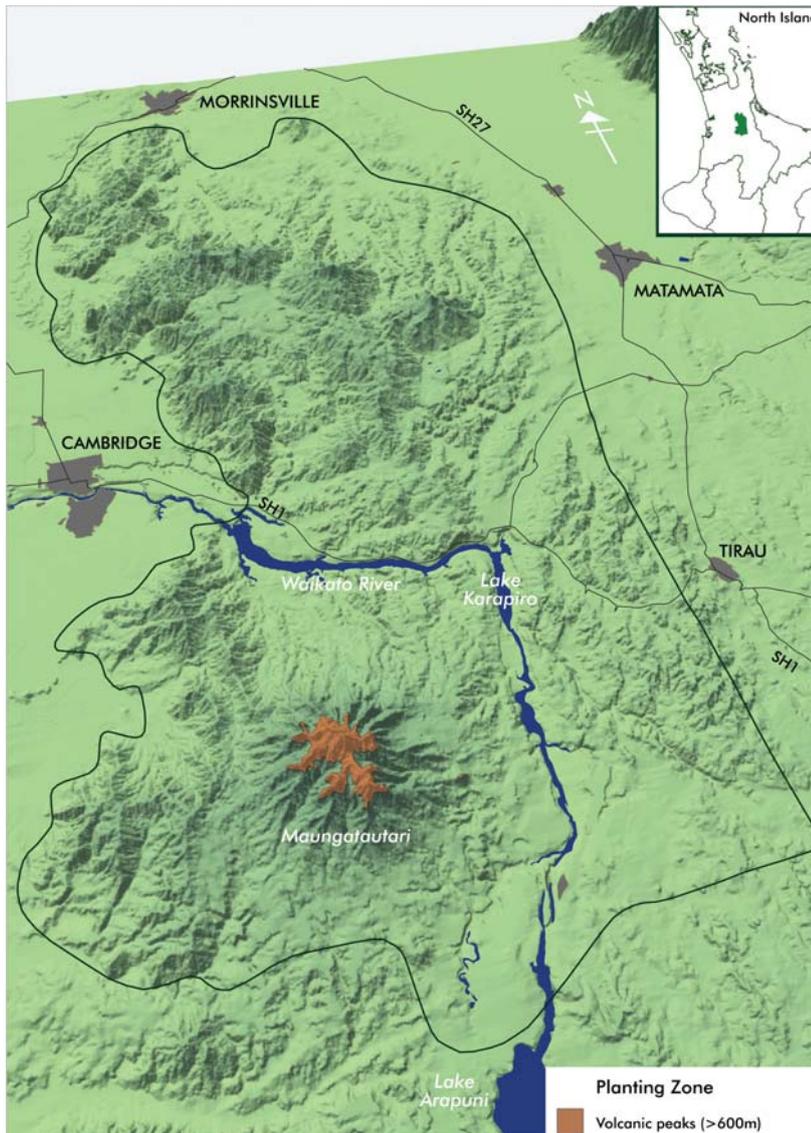
Altitudes in this zone are above 600 m, and the landform is steep and rugged. Soils are volcanic (formed from rhyolitic ash) and of very low fertility but well-drained. The entire zone is in native forest.



Vegetation is sub-montane conifer/broadleaf forest, with a low canopy layer of tawari, kamahi, toro and tawheowheo, kapuka and occasional emergent miro and Hall's totara.

Because this zone is all in reserve and fully covered in native forest, there are no planting hints, but typical species are included in the planting list at the end of this document.

Find out more about Maungatautari mountain and the plans to restore it at: www.maungatrust.org



Volcanic peaks planting zone