

# Planting guide for Western Waikato

## Western Ranges, hills and valleys



This planting guide is designed to assist anyone undertaking ecological restoration on the ranges and hills and in the valleys and wetlands to the west of Ngaruawahia and Huntly. It is one in a series of planting guides covering different ecosystems in Waikato District, including sections of the Waikato and Waipa rivers; peat lakes and kahikatea remnants.

The species lists are not intended to be a comprehensive description of the primeval forests that once existed on the ranges but a simplified recipe for the reconstruction of natural patterns and processes based on the practical knowledge and experience of plant growers involved in ecological restoration. It is worth remembering that ecological restoration is not usually a one-off activity but may require a number of interventions in order to restore natural patterns and processes. Restoring less common species may require specialist advice.

### Planting guide for western ranges and hills.

A series of ranges and rolling hill country lies between the Waikato River and the west coast. The majority of this landscape lays over basement greywacke and the clay soil derived from its weathering. Rimu-tawa forest dominates this landscape. In places much younger limestone protrudes above these weathered hills resulting in a karst landscape with its associated flora. Drier leached soils in this mild climate sometimes result in a forest of kauri, tanekaha and hard beech with a distinctive understory. Taraire dominates some forest in the north of the area near to the mouth of the Waikato River.

Inter-dispersed amongst these hills are areas of low-lying land and alluvial valley floors, sometimes seasonally flooded and in places, swampy. Vegetation is typically kahikatea-dominated forest with a distinctive flood tolerant understory.

Each zone has its own assemblage of plants grouped into five categories - colonisers; canopy trees; understory shrubs; grasses sedges, ferns and ground covers; and climbers and epiphytes. A representative range of species for each of the five categories is included in order that something resembling the natural structure of a forest can be restored. An indication is provided as to the total number of plants of each category (not individual species) that might be planted in a 100 square metre (10 x 10m) section in each of three situations - open ground, established cover and mature native canopy. Where a canopy already exists, the planting density will be less than open ground. It is worth looking at similar natural areas in the locality to gain a better appreciation of the mix and densities of species. The approximate final height of a plant is given where it is over one metre.



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Conservation  
*Te Papa Atawhai*

The guide to tolerances/preferences is intended to give guidance for the positioning of each plant. This is only a rough guide. On the table ○ means this species is unlikely to survive the condition, ◐ means it may survive but may not thrive or compete well with other vegetation and ● indicates the species is well adapted to the conditions. It is recommended that plants are located in positions indicated by ● in the tolerances/preferences section.

Some plants such as ferns and epiphytes may be best left to see if they come back naturally once conditions are right. Epiphytes are not the easiest plants to establish but if you want to assist natural processes there are several things you could do:

- place spores or seeds directly onto tree fern trunks (a good growing medium);
- surround roots of plant with a mixture of sphagnum moss and potting mix or compost, enclose with a suitable support (windbreak cloth, bird netting) and tie to a tree (do not use wire or nails);
- plant on a mound on the ground close to a tree in a shady place.

## Planting to attract wildlife

The plants value as bird food is indicated by an N for nectar and F for fruit and seeds.

Many native birds such as tui, bellbird, kaka, kakariki and silvereye will feed on both fruit and nectar whereas kereru prefer fruit and foliage. For birds like fantail, grey warbler and whitehead, plant varieties are not as important as a healthy mix of spiders, moths and beetles (which also feed on nectar/pollen) and earthworms. A good layer of leaf mulch on the forest floor should meet this need. Ruru (morepork) and kingfisher also eat insects as well as mice.

## Ecological restoration in the Waikato

Always choose ecosourced plants when undertaking ecological restoration. Ecosourced plants are those which are grown from seeds or propagules (including spores and cuttings) collected from naturally-occurring vegetation in a locality close to where they are to be replanted as part of a restoration project. With seeds, attention must be paid to possible cross-pollination from nearby garden plants.

It's worth taking care to ensure plants are ecosourced from natural areas to:

- avoid the risk of planting species which are not native to the local area and which could become invasive;
- help maintain the unique local characteristics of the native plants in your area;
- obtain plants that have a greater chance of growing successfully because they are adapted to local conditions.

Ecosourced Waikato (a group representing plant growers, the Department of Conservation and local and regional authorities) has developed the native plant lists for the Lower Waikato and Waipa Rivers with funding support from the Waikato District Council and Department of Conservation.



# Western Waikato – ranges and hills

## Hillslopes / rimu – tawa forest

Rimu-tawa forest once covered most of the higher ground between the Hamilton and Meremere Basins and the West Coast (as well as the Hapuakohe Range to the east of Waikato District) but is now more limited in distribution. While tawa dominated the canopy with rimu a common emergent species, the forest varied considerably between stream sides and ridges. This section describes a broad view of this forest type. Species should be selected with appropriate tolerances and preferences for the conditions at specific sites. These tolerances and preferences are indicated below along with planting tips.

Characteristic species		Planting			Plant tolerances / preferences							Planting tips		
Botanical name	Common name	Suggested number of plants per 100 m <sup>2</sup>			<input type="radio"/> unlikely to survive <input type="radio"/> may survive but not thrive <input checked="" type="radio"/> well adapted to conditions							maximum height (approx) if over 1 metre	bird food type	
		open ground	established cover	mature native canopy	flood	wet	moist	dry	sun	shade	frost			
<b>Colonisers</b>		<b>60</b>	<b>10</b>	<b>0</b>	<b>Colonisers are typically quick growing, tolerant of a wide range of environments and effective and early dispersers</b>									
<b>Listed in order from stream sides to ridges</b>														
<i>Austroderia splendens</i>	coastal toe toe													
<i>Cordyline australis</i>	ti kōuka/cabbage tree				●	●	●	●	●	○	●	open areas	12	F/N
<i>Coprosma robusta</i>	karamu				●	●	●	○	●	○	○	good soil	5	F
<i>Leptospermum scoparium</i>	manuka				●	●	●	●	●	○	○	very local, ecosource carefully	5	N
<i>Hoheria sextylosa</i>	lacebark				○	○	●	○	●	○	●	open areas	8	
<i>Kunzea robusta</i>	kanuka				●	○	●	●	●	○	○	dry sloping ground	16	N
<i>Olearia furfuracea</i>	akepiro				?	○	○	●	●	○	○	exposed areas especially coastal	7	
<b>Canopy trees</b>		<b>15</b>	<b>15</b>	<b>0</b>	<b>Canopy trees are long-lived, tall and spreading, but slow to establish</b>									
<b>Listed in order from wettest to driest sites</b>														
<i>Dacrycarpus dacrydioides</i>	kahikatea				○	○	●	○	●	○	●	sunny moist areas	60	F
<i>Laurelia novae-zelandiae</i>	pukatea				●	●	●	○	○	○	○	wet sheltered areas	35	
<i>Syzygium maire</i>	swamp maire				?	●	○	○	●	●	○	sheltered, stable boggy areas	16	F
<i>Alectryon excelsus</i>	titoki				○	○	●	○	○	●	○	sheltered areas	10	F
<i>Coprosma arborea</i>	mamangi				○	○	○	●	●	○	○	well drained sloping ground	10	F
<i>Beilschmiedia tawa</i>	tawa				○	○	●	○	○	●	○	sheltered areas	20	F

<i>Podocarpus totara</i>	totara				●	○	●	○	●	○	●	anywhere	30	F
<i>Vitex lucens</i>	puriri				○	○	●	○	●	●	○	Only northern frost free sites	25	F/N
<i>Dysoxylum spectabile</i>	kohekohe				○	○	●	○	○	●	○	sheltered sloping ground	17	F/N
<i>Dacrydium cupressinum</i>	rimu				?	○	●	●	●	○	●	well drained sloping ground	35	F
<i>Litsea calicaris</i>	mangeao				?	○	●	●	●	○	○	well drained sloping ground	15	
<i>Prumnopitys ferruginea</i>	miro				?	○	○	●	●	●	●	well drained sloping ground	35	F
<i>Weinmannia racemosa</i>	kamahi				○	○	●	●	●	○	●	steep ground	26	
<b>Understorey</b>														
<b>Listed in order from wettest to driest sites</b>		<b>25</b>	<b>25</b>	<b>15</b>										
<i>Streblus heterophyllus</i>	turepo				●	○	○	○	○	●	●	established sheltered site initially	12	F
<i>Melicytus ramiflorus</i>	mahoe				○	○	●	○	●	●	○	sheltered site initially	10	F
<i>Carpodetus serratus</i>	putawetaweta				○	○	●	○	●	●	●	sun or shade, avoid flooding	10	F
<i>Fuchsia excorticata</i>	kotukutuku				○	○	●	○	●	●	○	wet areas above flood level	12	F
<i>Schefflera digitata</i>	pate				○	●	●	○	●	●	○	wet areas above flood level	8	F
<i>Coprosma grandifolia</i>	kawariki/kanono				●	○	●	○	○	●	○	moist shady stream banks	7	F
<i>Aristolelia serrata</i>	makomako/wineberry				○	○	●	○	●	○	●	not too wet or too dry	8	F
<i>Myrsine australis</i>	mapou				○	○	●	●	●	●	○	anywhere	7	F
<i>Pseudopanax crassifolius</i>	horoeka/lancewood				?	●	●	●	●	○	●	exposed areas, wet or dry	13	F
<i>Rhabdothamnus solandrii</i>	taurepo				○	○	●	○	○	●	○	steep wet banks	2	N
<i>Dicksonia squarrosa</i>	wheki				?	○	○	○	○	●	●	damp sheltered areas	2-8	
<i>Cyathea dealbata</i>	ponga				?	○	○	○	○	●	●	damp sheltered areas	10	
<i>Cyathea medullaris</i>	mamaku				?	○	○	○	○	●	●	damp sheltered areas	15	
<i>Cyathea smithii</i>	kātote / soft tree fern				?	○	○	○	○	●	●	damp sheltered areas, higher up		
<i>Rhopalostylis sapida</i>	nikau				?	?	●	○	○	○	○	sheltered	10	F
<i>Leucopogon fasciculatus</i>	mingimingi				○	○	○	○	○	●	○	light shade	5	F
<i>Nestegis lanceolata</i>	white maire				?	○	●	●	●	●	●	most areas	15	F
<i>Piper excelsum</i>	kawakawa				○	○	●	●	●	●	○	sheltered	3-7	F
<i>Hedycarya arborea</i>	porokaiwhiri/pigeonwood				●	○	●	○	○	●	○	sheltered sites initially	12	F
<i>Geniostoma ligustrifolium</i>	hangehange				○	○	●	○	●	●	○	wide range of tolerances	4	
<i>Cordyline banksii</i>	te ngāhere				?	○	○	●	●	○	?	well drained sloping ground	3	F
<i>Alseuosmia quercifolia</i>	toropapa				?	?	●	○	●	○	○	moist well drained, light shade	1.5	F
<i>Brachyglottis repanda</i>	rangiora				○	○	○	●	●	●	?	well drained	7	

<i>Coprosma lucida</i>	shining karamu				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	well drained sloping ground	5	F
<i>Coprosma rhamnoides</i>					<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	well drained sloping ground	2	F
<i>Coprosma spathulata</i>					<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	well drained sloping ground	2	F
<i>Olearia ranii</i>	heketara				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	?	well drained	8	
<i>Pseudopanax arboreus</i>	five finger				?	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	steep clay banks	8	F
<b>Grasses, sedges and ferns</b>		<b>0</b>	<b>10</b>	<b>15</b>	<b><i>These plants are well adapted to shady situations under taller vegetation.</i></b>									
<i>Microlaena avenaceae</i>	bush rice grass				?	?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	?	vulnerable to drought		
<i>Carex uncinata</i>	hook sedge				?	?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	?	damp site		
<i>Carex dissita</i>	forest sedge				?	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	damp site		
<i>Elatostema rugosum</i>	parataniwha				<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	shady stream banks		
<b>Climbers and epiphytes</b>		<b>0</b>	<b>0</b>	<b>10</b>	<b><i>These plants take advantage of trees to get their leaves up into the sunlight</i></b>									
<i>Asplenium flaccidum</i>	hanging spleenwort											attach to tree		
<i>Asplenium polyodon</i>	sickle spleenwort											attach to tree		
<i>Astelia solandri</i>	kahakaha											attach to tree		
<i>Astelia hastata</i>	kahakaha											attach to tree		
<i>Earina autumnalis</i>	Easter orchid											attach to tree		
<i>Earina mucronata</i>	peka-a-waka											attach to tree		
<i>Dendrobium cunninghamii</i>	winika											attach to tree		
<i>Microsorium pustulatum</i>	kowaowao/hounds tounge fern											attach to tree		
<i>Microsorium scandens</i>	mokimoki											attach to tree		
<i>Pyrrhosia eleagnifolia</i>	leather leaf fern											attach to tree		
<i>Freycinetia banksii</i>	kiekie				<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	moist sheltered areas		F/N
<i>Parsonsia heterophylla</i>	kaihua/NZ jasmine				<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	moist sheltered areas		
<i>Passiflora tetrandra</i>	kohia/NZ passionfruit				<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	open areas		F/N
<i>Rubus cissoides</i>	tataramoa				<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	?	open areas		
<i>Metrosideros diffusa</i>	akatea				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	well drained soil or base of tree		N
<i>Metrosideros fulgens</i>	rata				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	well drained soil		N
<i>Metrosideros perforata</i>	akatea				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	well drained soil or base of tree		N
<i>Clematis paniculata</i>	puawananga				<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	sheltered areas		
<i>Ripogonum scandens</i>	kareao/supplejack				<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	moist shady areas		F

# Western Waikato – ranges and hills

## Leached ridges / kauri – hard beech forest

Within a broader mosaic of forest types, forest dominated by kauri and hard beech can be found, most commonly on well drained leached ridges. Historically, kauri may have dominated some coastal flats and river terraces in the area but no remnants remain as a reference guide to the plant associations.

Characteristic species		Planting			Plant tolerances / preferences							Planting tips			
Botanical name	Common name	Suggested number of plants per 100 m <sup>2</sup>			○ unlikely to survive ◐ may survive but not thrive ● well adapted to conditions							Plant frost sensitive species under other trees	maximum height (approx) if over 1 metre	food type	
		open ground	established cover	mature native canopy	flood	wet	moist	dry	sun	shade	frost				
<b>Colonisers</b>		<b>35</b>	<b>10</b>	<b>0</b>	<b>Colonisers are typically quick growing, tolerant of a wide range of environments and effective and early dispersers</b>										
<i>Kunzea robusta</i>	kanuka				●	○	●	●	●	○	◐	dry sloping ground	20		
<i>Pomaderris amoena</i>	tauhinu				?	○	◐	●	●	○	?	dry exposed clay banks	2		
<i>Hebe stricta</i>	koromiko				○	○	●	●	●	○	●	short lived	2		
<b>Canopy trees listed in order from most common to least common</b>		<b>15</b>	<b>15</b>	<b>0</b>	<b>Canopy trees are long-lived, tall and spreading, but slow to establish</b>										
<i>Agathis australis</i>	kauri				?	?	●	●	●	●	○	leached ridges	50		
<i>Phyllocadus trichomanoides</i>	tanekaha				?	?	●	●	●	●	◐	leached ridges	30	F	
<i>Fuscopora truncata</i>	hard beech				○	○	●	●	○	●	●	leached ridges, requires shade	30		
<i>Dacrydium cupressinum</i>	rimu				?	○	●	●	●	●	●	sloping ground	35	F	
<b>Understorey Listed in order from wettest to driest habitat</b>		<b>25</b>	<b>25</b>	<b>15</b>	<b>Understorey plants require the stable conditions created under trees</b>										
<i>Alseuosmia quercifolia</i>					?	?	●	○	●	○	○	moist well drained light shade	1.5	F	
<i>Coprosma lucida</i>	shining karamu				◐	○	◐	●	●	●	●	well drained sloping ground	5	F	
<i>Coprosma rhamnoides</i>					◐	○	●	◐	●	●	●	well drained sloping ground	2	F	
<i>Coprosma spathulata</i>					◐	○	●	●	○	●	○	well drained sloping ground	2	F	
<i>Cordyline banksii</i>	te ngahere				○	○	◐	●	●	◐	?	well drained sloping ground	3	F	

<i>Geniostoma ligustrifolium</i>	hangehange				<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	wide range of tolerances	4	
<i>Leucopogon fasciculatus</i>	mingimingi				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	light shade	5	F
<i>Myrsine australis</i>	mapou				<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	anywhere	7	F
<i>Nestegis lanceeolata</i>	white maire				?	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	wide range of tolerances	13	F
<i>Brachyglottis repanda</i>	rangiora				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	?	well drained	7	
<i>Olearia ranii</i>	heketara				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	?	well drained	8	
<i>Cyathodes juniperina</i>	prickly mingimingi				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	well drained sloping ground	5	F
<i>Pseudopanax crassifolius</i>	horoeke/lancewood				?	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	exposed areas	15	F
<b>Grasses, sedges, lilies and ferns</b>		<b>0</b>	<b>10</b>	<b>15</b>	<b>These plants are well adapted to shady sites under taller vegetation.</b>									
<i>Astelia trinervia</i>	kauri grass				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	?	steep ground		F
<i>Gahnia pauciflora</i>	cutting sedge				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	?	steep ground		
<i>Blechnum parrisiae</i>	rasp fern				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	?	light shade		
<i>Lindsea trichomanoides</i>	fern				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	?	light shade		
<i>Morelotia affinis</i>	sedge											exposed clay banks		
<i>Cardiomanes reniforme</i>	raurenga/kidney fern				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	?	light shade		
<b>Climbers and epiphytes</b>		<b>0</b>	<b>0</b>	<b>10</b>										
<i>Asplenium flaccidum</i>	hanging spleenwort											attach to tree		
<i>Asplenium polyodon</i>	sickle spleenwort											attach to tree		
<i>Astelia solandri</i>	kaiwharawhara											attach to tree		F
<i>Astelia hastata</i>	kahakaha											attach to tree		F
<i>Earina autumnalis</i>	Easter orchid											attach to tree		
<i>Earina mucronata</i>	peka-a-waka											attach to tree		
<i>Dendrobium cunninghamii</i>	winika											attach to tree		
<i>Microsorium pustulatum</i>	kowaowao/hounds tounge fern											attach to tree		
<i>Microsorium scandens</i>	mokimoki											attach to tree		
<i>Pyrrosia eleagnifolia</i>	leather leaf fern											attach to tree		
<i>Freycinetia banksii</i>	kiekie				<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	moist sheltered areas		F
<i>Parsonsia heterophylla</i>	kaihua/NZ jasmine				<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	moist sheltered areas		N
<i>Passiflora tetrandra</i>	kohia/NZ passionfruit				<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	open areas		
<i>Rubus cissoides</i>	tataramoa				<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	?	open areas		F
<i>Metrosideros diffusa</i>	akatea				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	sheltered base of tree		N
<i>Metrosideros fulgens</i>	rata				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	well drained soil		N

<i>Metrosideros perforata</i>	akatea				○	○	○	●	●	●	●	sheltered base of tree		N
<i>Ripogonum scandens</i>	kareao/suplejack				●	○	●	○	●	●	?	moist shady areas		F
<i>Clematis paniculata</i>	puawhannanga				○	○	●	○	○	●	○	sheltered areas		N
<i>Lygodium articulatum</i>	mangemange				○	○	●	●	○	●	?	well drained light shade		

## Western Waikato – ranges and hills

### North Western taraire forest

Taraire dominates some forest on the hills overlooking the lower Waikato River from Mercer to the river mouth. Occasional rimu and northern rata emerge above the canopy and a range of other canopy trees are found growing in association, each in its preferred habitat.

Characteristic species		Planting			Plant tolerances / preferences							Planting tips		maximum height (approx) if over 1 metre	bird food type
Botanical name	Common name	open ground	established cover	mature stage	flood	wet	moist	dry	sun	shade	frost				
		Suggested number of plants per 100 m <sup>2</sup>			○ unlikely to survive ○ may survive but not thrive ● well adapted to conditions										
<b>Colonisers</b>		<b>60</b>	<b>10</b>	<b>0</b>	<i>Colonisers are typically quick growing, tolerant of a wide range of environments and effective and early dispersers</i>										
<i>Kunzea robusta</i>	kanuka				●	○	●	●	●	○	○	dry sloping ground	16	N	
<i>Coprosma robusta</i>	karamu				●	●	●	○	●	○	○	good soil	5	F	
<i>Cordyline australis</i>	ti kōuka/cabbage tree				●	●	●	●	●	○	●	open areas	12	F/N	
<i>Gahnia setifolia</i>	sedge				?	?	●	●	●	○	●	open areas, steep banks	?		
<b>Canopy trees</b>		<b>15</b>	<b>15</b>	<b>0</b>	<i>Canopy trees are long-lived, tall and spreading, but slow to establish</i>										
<i>Beilschmiedia taraire</i>	taraire				?	●	●	●	●	●	○		20	F	
<i>Alectryon excelsus</i>	titoki				○	○	●	○	○	●	○	sheltered areas	10	F	
<i>Coprosma arborea</i>	mamangi				○	○	○	●	●	○	○	well drained sloping ground	10	F	
<i>Dacrycarpus dacrydioides</i>	kahikatea				○	○	●	○	●	○	●	sunny moist areas	60	F	
<i>Dacrydium cupressinum</i>	rimu				?	○	●	●	●	○	●	well drained sloping ground	35	F	



<i>Dysoxylum spectabile</i>	kohekohe				○	○	●	○	○	●	○	sheltered sloping ground	17	N/F
<i>Elaeocarpus dentatus</i>	hinau				?	○	●	○	○	●	○	well drained sloping ground	14	F
<i>Knightia excelsa</i>	rewarewa				○	○	●	○	●	○	●	damp clay banks	30	N
<i>Metrosideros robusta</i>	northern rata				?	?	●	●	●	○	●	epiphyte, establish in open areas	30	N
<i>Phyllocladus trichomanoides</i>	tanakaha				?	?	●	●	●	●	○	leached ridges	30	F
<i>Podocarpus totara</i>	totara				●	○	●	○	●	○	●	anywhere	30	F
<i>Sophora microphylla</i>	kowhai				●	○	●	●	●	○	●	exposed areas	10	
<i>Vitex lucens</i>	puriri				?	?	●	●	●	●	○	rich soil	20	N
<b>Understorey</b>		<b>25</b>	<b>25</b>	<b>15</b>	<b>Understorey plants thrive in the stable conditions created under trees</b>									
<i>Brachylottis repanda</i>	rangiora				○	○	○	●	●	●		well drained	7	
<i>Coprosma lucida</i>	karamu				○	○	○	●	●	●	●	well drained sloping ground	5	F
<i>Coprosma rhamnoides</i>					○	○	●	○	●	●	●	well drained sloping ground	2	F
<i>Coprosma spathulata</i>					○	○	●	●	○	●	○	well drained sloping ground	2	F
<i>Cordyline banksii</i>	ti ngāhere				○	○	○	●	●	○	?	well drained sloping ground	3	F
<i>Leptecophylla juniperina subsp. juniperina</i>	prickly mingimingi				○	○	○	●	●	●	●	well drained sloping ground	5	F
<i>Geniostoma ligustrifolium</i>	hangehange				○	○	●	○	●	●	○	wide range of tolerances	4	
<i>Leucopogon fasciculatus</i>	mingimingi				○	○	○	○	●	○	●	light shade	5	F
<i>Melicytus ramiflorus</i>	mahoe				○	○	●	○	●	●	○	sheltered drier area	10	F
<i>Myrsine australis</i>	mapou				○	○	●	●	●	●	○	anywhere	7	F
<i>Olearia ranii</i>	heketara				○	○		●	●	●	?	well drained	8	
<i>Piper excelsum</i>	kawakawa				○	○	●	●	●	●	○	sheltered areas	3-7	F
<i>Pseudopanax arboreus</i>	five finger				?	○	●	●	●	○	●	steep clay banks	8	F
<i>Pseudopanax crassifolius</i>	horoeka/lancewood				?	●	●	●	●	○	●	exposed areas	13	F
<b>Grasses, sedges and ferns</b>		<b>0</b>	<b>10</b>	<b>15</b>	<b>These plants are well adapted to shady situations sometimes under taller vegetation, sometimes in boggy or very wet places</b>									
<i>Blechnum parrisiae</i>	rasp fern				?	○	●	○	○	●	?	very hardy fern		
<i>Asplenium oblongifolium</i>	shining spleenwort				?	?	○	●	○	●	?	well drained shady sites		
<i>Carex solandri</i>	forest sedge				●	●	●	○	○	●	?	wet areas		
<i>Dianella nigra</i>	tūrutu/blueberry				?	●	●	○	●	○	●	clay banks		F
<i>Gahnia setifolia</i>	mapere				?	?	●	●	●	○	?	Clay banks and exposed areas		



# Western Waikato – ranges and hills

## Karst landscapes

The steep exposed rock and associated crevasses combined with the mild, humid climate and basic soil characteristic of limestone outcrops support a unique flora. On the very steep exposed sites only low stature plants adapted to the conditions and rocky substrate persist. This graduates into taller forest lower down the slopes which eventually resembles the forest of the surrounding landscape. However, immediately below limestone outcrops, springs and wet areas are common - the vegetation of these wet areas is included in this list. The exposed rocky outcrops may not experience the same succession of species as happens in a more complex forest so a separate category for colonising plants is not used. Instead, low stature species which may colonise but also persist around rocky outcrops are listed.

Characteristic species		Planting			Plant tolerances / preferences							Planting tips		
Botanical name	Common name	Suggested number of plants per 100 m <sup>2</sup>			○ unlikely to survive ◐ may survive but not thrive ● well adapted to conditions							maximum height (approx) if over 1 metre	bird food type	
		open ground	established cover	mature stage	flood	wet	moist	dry	sun	shade	frost			
<b>Listed in order from most exposed, rocky conditions to deeper soil and taller forest</b>		<b>60</b>	<b>10</b>	<b>0</b>										
<i>Arthropodium cirratum</i>	rengarenga					○	●	●	●	◐	○			
<i>Blechnum parrisiae</i>	rasp fern					○	◐	●	◐	●	?	light shade		
<i>Gahnia lacera</i>	cutty grass					?	●	●	●	○	?	exposed areas		
<i>Pyrosia eleagnifolia</i>	leather leaf fern					○	●	●	●	◐	?	exposed rocks		
<i>Asplenium polyodon</i>	sickle spleenwort					○	●	●	●	◐	?	well drained soil or base of outcrop		
<i>Machaerina sinclairii</i>	pepepe					●	●	◐	●	◐	?	well drained soil or base of outcrop		
<i>Phormium tenax</i>	harakeke / flax					●	●	●	●	○	●	well drained soil or base of outcrop	N	
<i>Kunzea robusta</i>	kanuka					○	●	●	●	○	◐	dry sloping ground	16	N
<i>Metrosideros perforata</i>	akatea					○	○	●	●	●	●	well drained soil or base of outcrop		N
<i>Geniostoma ligustrifolium</i>	hangehange					◐	●	◐	●	●	◐	wide range of tolerances	4	
<i>Rhabdothamnus solandrii</i>	taurepo					◐	●	◐	◐	●	◐	steep banks, humid micro-climate	2	N

<b>Canopy trees listed in order from wettest to driest sites</b>		15	15	0	flood	wet	moist	dry	sun	shade	frost	Planting tips		
<i>Laurelia novae-zelandiae</i>	pukatea					●	●	○	○	●	○	constantly moist soil		
<i>Dacrycarpus dacrydioides</i>	kahikatea				●	●	●	○	●	○	●	well lit areas	60	F
<i>Rhopalostylis sapida</i>	nikau					○	●	○	○	●	○	constantly moist soil / deep shade		F
<i>Alectryon excelsus</i>	titoki				○	○	●	○	●	●	○	sheltered forest		F
<i>Vitex lucens</i>	puriri				○	○	●	○	●	●	○	sheltered from frost	20	F/N
<i>Dysoxylum spectabile</i>	kohekohe				○	○	●	○	○	●	○	sheltered sloping ground	17	F/N
<i>Rhopalostylis sapida</i>	nikau					○	●	○	○	●	○	constantly moist soil / deep shade		F
<b>Understorey</b>		25	25	25	<b>Understorey plants require the stable conditions created under trees</b>									
<i>Carpodetus serratus</i>	putawetaweta				○	○	●	○	●	●	●	sun or shade, damp soil	10	F
<i>Pseudopanax crassifolius</i>	horoeke/lancewood				?	●	●	●	●	○	●	exposed areas	13	F
<i>Piper excelsum</i>	kawakawa				○	○	●	●	●	●	○	sheltered areas	3-7	F
<i>Coprosma grandifolia</i>	kawariki/kanono				●	○	●	○	○	●	○	moist shady stream banks	7	F
<i>Myrsine australis</i>	mapou				○	○	●	●	●	●	○	anywhere	7	F
<i>Melicytus ramiflorus</i>	mahoe				○	○	●	○	●	●	○	sheltered site initially	10	F
<i>Aristotelia serrata</i>	makomako/wineberry				○	○	●	○	●	○	●	not too wet or too dry	8	F
<i>Fuchsia excorticata</i>	kotukutuku				○	○	●	○	●	●	○	wet areas above flood level	12	F
<i>Hedycarya arborea</i>	porokaiwhiri/pigeonwood				●	○	●	○	○	●	○	sheltered sites initially	12	F
<i>Coprosma rigida</i>					●	●	●	○	●	○	●	wetter areas	5	F
<i>Coprosma rotundifolia</i>					●	●	●	○	●	○	●	wetter areas	5	F
<b>Grasses, sedges and ferns found in damp forest below rocky outcrops. Listed in order from wettest sites.</b>		0	10	15	<b>These plants are well adapted to shady situations under taller vegetation or in boggy, wet places</b>									
<i>Carex secta</i>	purei				●	●	●	○	●	○	●	very wet areas		
<i>Carex virgata</i>	purei				●	●	●	○	●	○	●	very wet areas		
<i>Elatostema rugosum</i>	parataniwha				●	●	●	○	○	●	○	shady springs and stream banks		
<i>Asplenium bulbiferum</i>	hen and chicken fern				○	○	●	○	○	●	○	shady springs and stream banks		
<i>Pneumatopteris pennigera</i>	pakauroharoha /gully fern				○	○	●	○	○	●	○	Shady springs and stream banks		
<i>Carex dissita</i>	forest sedge				?	○	●	○	●	●	●	damp site		
<i>Carex uncinata</i>	hook sedge				?	●	●	○	○	●	?	damp site		
<i>Microlaena avenaceae</i>	bush rice grass				?	○	●	○	○	●	?	vulnerable to drought		

# Western Waikato - ranges and hills

## Steep rocky streams

Flowing down from Pirongia, the Hakarimata ranges and other higher ground are steep rocky fast flowing streams. The deep incisions made by these streams leave room for only occasional alluvial flats. The ground is steep, well drained and rocky.

Characteristic species		Planting			Plant tolerances / preferences							Planting tips		
Botanical name	Common name	Suggested number of plants per 100 m <sup>2</sup>			○ unlikely to survive ◐ may survive but not thrive ● well adapted to conditions							maximum height (approx) if over 1 metre	bird food type	
		open ground	established cover	mature stage	flood	wet	moist	dry	sun	shade	frost			
<b>Colonisers</b>					<i>Colonisers are typically quick growing, tolerant of a wide range of environments and effective and early dispersers</i>									
<b>Listed in order from wettest to driest preferences</b>		<b>60</b>	<b>10</b>	<b>0</b>										
<i>Cordyline australis</i>	ti kōuka/cabbage tree				●	●	●	●	●	◐	●	open areas	12	F/N
<i>Hoheria sextylosa</i>	houhere / lacebark				●	◐	●	◐	●	◐	●	open areas	6	
<i>Coriaria arborea</i>	tutu				●	◐	●	◐	●	◐	●	poisonous to livestock	6	F
<i>Coprosma robusta</i>	karamu				●	●	●	○	●	○	◐	good soil	5	F
<i>Kunzea robusta</i>	kanuka				●	○	●	●	●	○	◐	dry sloping ground	16	N
<b>Canopy trees</b>					<i>Canopy trees are long-lived, tall and spreading, but slow to establish</i>									
<b>listed in order from wettest to driest preferences</b>		<b>15</b>	<b>15</b>	<b>0</b>										
<i>Syzygium maire</i>	maire tawaki / swamp maire				○	●	◐	○	◐	●	○	boggy seeps above floods	10	F
<i>Laurelia novae-zelandiae</i>	pukatea				●	●	●	◐	◐	◐	○	sheltered areas	35	
<i>Podocarpus totara</i>	totara				●	◐	●	◐	●	◐	●	anywhere	30	F
<i>Alectryon excelsus</i>	titoki				○	○	●	◐	◐	●	◐	sheltered areas	10	F
<i>Beilschmiedia tawa</i>	tawa				○	○	●	◐	◐	●	◐	sheltered areas	20	F
<i>Weinmannia racemosa</i>	kamahi				◐	◐	●	◐	●	○	●	sunny moist areas	60	F
<i>Prumnopitys ferruginea</i>	miro				●	◐	●	◐	●	●	●	wide range of tolerances		
<i>Elaeocarpus dentatus</i>	hinau				●	◐	●	◐	●	●	?	Moist sheltered well drained site		

Understorey Listed in order from wettest areas		25	25		flood	wet	moist	dry	sun	shade	frost	Planting tips		
<i>Coprosma rigida</i>					●	●	●	○	●	○	●	sun or shade	5	
<i>Coprosma rotundifolia</i>					●	●	●	○	●	●	●	sun or shade	4	F
<i>Pseudopanax crassifolius</i>	horoeke/lancewood				?	●	●	●	●	○	●	exposed areas	13	F
<i>Streblus heterophyllus</i>	turepo				●	○	○	○	○	●	●	moist shady stream banks	10	F
<i>Dicksonia squarrosa</i>	wheki				?	○	○	○	●	●	●	damp sheltered areas	2-8	
<i>Cyathea dealbata</i>	ponga				?	○	○	○	●	●	●	damp sheltered areas	10	
<i>Cyathea medullaris</i>	mamaku				?	○	○	○	●	●	●	damp sheltered areas	15	
<i>Carpodetus serratus</i>	putawetaweta				○	○	●	○	●	●	●	sun or shade, avoid flooding	10	F
<i>Coprosma grandifolia</i>	kawariki/kanono				●	○	●	○	○	●	○	moist shady stream banks	7	F
<i>Myrsine australis</i>	mapou				○	○	●	●	●	●	○	anywhere	7	F
<i>Geniostoma ligustrifolium</i>	hangehange				○	○	●	○	●	●	○	wide range of tolerances	4	
<i>Melicytus ramiflorus</i>	mahoe				○	○	●	○	●	●	○	sheltered site initially	10	F
<i>Aristotelia serrata</i>	makomako/wineberry				○	○	●	○	●	○	●	not too wet or too dry	8	F
<i>Schefflera digitata</i>	pate				○	○	●	○	●	●	○	wet areas above flood level	8	F
<i>Fuchsia excorticata</i>	kotukutuku				○	○	●	○	●	●	○	wet areas above flood level	12	F
<i>Hedycarya arborea</i>	porokaiwhiri/pigeonwood				●	○	●	○	○	●	○	sheltered sites initially	12	F
<i>Nestegis lanceolata</i>	white maire				○	○	●	○	●	●	?	moist sheltered site	15	F
<i>Rhabdothamnus solandrii</i>	taurepo				○	○	●	○	○	●	○	steep banks, humid microclimate	2	
<i>Rhopalostylis sapida</i>	nikau				?	?	●	○	○	●	○	sheltered	10	F
<i>Aristotelia serrata</i>	makomako/wineberry				○	○	●	○	●	○	●	not too wet or too dry	8	F
<i>Lophomyrtus bullata</i>	ramarama				●	○	●	○	●	●	○	alluvial terraces	8	F
<b>Grasses, sedges and ferns</b>		<b>0</b>	<b>10</b>	<b>15</b>	<b><i>These plants are well adapted to challenging situations which may be very wet or shady.</i></b>									
<i>Austroderia fulvida</i>	toetoe				●	●	●	●	●	○	●	sunny stream banks		
<i>Elatostema rugosum</i>	parataniwha				●	●	●	○	○	●	○	shady stream banks		
<i>Asplenium bulbiferum</i>	hen and chicken fern				○	○	●	○	○	●	○	shady stream banks		
<i>Pneumatopteris pennigera</i>	pakauroharoha /gully fern				○	○	●	○	○	●	○	shady stream banks		
<i>Carex dissita</i>	forest sedge				○	○	●	○	●	●	?	Moist soil some shade		
<i>Carex uncinata</i>	hook sedge				○	●	●	○	○	●	?	moist soil some shade		
<i>Microlaena avenaceae</i>	bush rice grass				?	○	●	○	○	●	?	vulnerable to drought /moist microclimate		

		0	0	10	flood	wet	moist	dry	sun	shade	frost	Planting tips	
<b>Climbers and epiphytes</b>		0	0	10									
<i>Asplenium flaccidum</i>	hanging spleenwort											attach to tree	
<i>Asplenium polyodon</i>	sickle spleenwort											attach to tree	
<i>Astelia solandri</i>	kahakaha											attach to tree	F
<i>Astelia hastata</i>	kahakaha											attach to tree	F
<i>Earina autumnalis</i>	Easter orchid											attach to tree	
<i>Earina mucronata</i>	peka-a-waka											attach to tree	
<i>Dendrobium cunninghamii</i>	winika											attach to tree	
<i>Microsorium pustulatum</i>	kowaowao/hounds tounge fern											attach to tree	
<i>Microsorium scandens</i>	mokimoki											attach to tree	
<i>Pyrrhosia eleagnifolia</i>	leather leaf fern											attach to tree	
<i>Freycinetia banksii</i>	kiekie				○	●	●	○	○	●	○	moist sheltered areas	F/N
<i>Parsonsia heterophylla</i>	kaihua/NZ jasmine				●	●	●	○	●	●	○	moist sheltered areas	N
<i>Passiflora tetrandra</i>	kohia/NZ passionfruit				●	○	●	●	●	○	●	open areas	F/N
<i>Metrosideros fulgens</i>	rata				○	○	○	●	●	●	○	well drained soil	N
<i>Metrosideros perforata</i>	akatea				○	○	○	●	●	●	●	well drained soil or base of tree	N
<i>Ripogonum scandens</i>	kareao/supplejack												

Orchid plants must never be collected from natural areas.

# Western Waikato – alluvial valleys

## Kahikatea dominated margins of gully, stream, wetland and rivers

Alluvial flats and swampy ground along the margins of waterways and wetlands and interspersing the hill country favours a community of plants adapted to poorly drained soil and occasional flooding

Characteristic species		Planting			Plant tolerances / preferences							Planting tips			
Botanical name	Common name	Suggested number of plants per 100 m <sup>2</sup>			○ unlikely to survive ◐ may survive but not thrive ● well adapted to conditions							maximum height (approx) if over 1 metre	bird food type		
		open ground	established cover	mature stage	flood	wet	moist	dry	sun	shade	frost				
<b>Colonisers</b> Listed in order from wettest to driest habitat		60	10	0	<i>Colonisers are typically quick growing, tolerant of a wide range of environments and effective and early dispersers</i>										
<i>Leptospermum scoparium</i>	manuka				●	●	●	◐	●	◐	●	Wet open areas	4	N	
<i>Cordyline australis</i>	ti kouka/cabbage tree				●	●	●	●	●	◐	●	open areas	12	F/N	
<i>Hoheria sixtylosa</i>	houhere / lacebark				●	◐	●	◐	●	◐	●	open areas	6		
<i>Coprosma robusta</i>	karamu				●	●	●	○	●	○	◐	good soil	5	F	
<i>Kunzea robusta</i>	kanuka				●	○	●	●	●	○	◐	dry sloping ground	16	N	
<b>Canopy trees</b> Listed in order from wettest to driest habitat		15	15	0	<i>Canopy trees are long-lived, tall and spreading, but slow to establish. Plant where there are gaps in the canopy</i>										
<i>Dacrycarpus dacrydioides</i>	kahikatea				◐	◐	●	◐	●	○	●	sunny moist areas	60	F	
<i>Laurelia nova-zelandiae</i>	pukatea				●	●	●	◐	◐	◐	○	sheltered areas	35		
<i>Prumnopitys taxifolia</i>	matai				●	◐	●	◐	●	●	●	Wide range of tolerances	35	F	
<i>Podocarpus totara</i>	totara				●	◐	●	◐	●	◐	●	anywhere	30	F	
<i>Elaeocarpus hookerianus</i>	pokaka				●	◐	●	◐	●	●	?	moist sheltered site	14	F	
<i>Alectryon excelsus</i>	titoki				○	○	●	◐	◐	●	◐	sheltered areas	10	F	
<i>Beilschmiedia tawa</i>	tawa				○	○	●	◐	◐	●	◐	sheltered areas	20	F	
<i>Coprosma arborea</i>	mamangi				○	○	◐	●	●	◐	○	well drained sloping ground	10	F	



<b>Understorey</b>														
<b>Listed in order from wettest to driest habitat</b>		<b>25</b>	<b>25</b>	<b>15</b>	<b>flood</b>	<b>wet</b>	<b>moist</b>	<b>dry</b>	<b>sun</b>	<b>shade</b>	<b>frost</b>	<b>Planting tips</b>		
<i>Coprosma tenuicaulis</i>	hukihuki				●	●	●	○	●	○	●	boggy to damp areas	4	F
<i>Coprosma propinqua</i>	mingimingi				●	●	●	○	●	○	●	boggy to damp areas	4	F
<i>Coprosma X cunninghamii</i>					●	●	●	○	●	○	●	good in flood	5	F
<i>Coprosma rigida</i>					●	●	●	○	●	○	●	sun or shade	5	F
<i>Coprosma rotundifolia</i>					●	●	●	○	●	●	●	sun or shade	4	F
<i>Pseudopanax crassifolius</i>	horoeaka/lancewood				?	●	●	●	●	○	●	exposed areas	13	F
<i>Streblus heterophyllus</i>	turepo				●	○	○	○	○	●	●	moist shady stream banks	12	F
<i>Dicksonia squarrosa</i>	wheki				○	○	○	○	●	●	●	damp sheltered areas	2-8	
<i>Cyathea dealbata</i>	ponga				○	○	○	○	●	●	●	damp sheltered areas	10	
<i>Cyathea medullaris</i>	mamaku				○	○	○	○	●	●	●	damp sheltered areas	15	
<i>Carpodetus serratus</i>	putawetaweta				○	○	●	○	●	●	●	sun or shade, avoid flooding	10	F
<i>Coprosma grandifolia</i>	kawariki/kanono				●	○	●	○	○	●	○	moist shady stream banks	7	F
<i>Myrsine australis</i>	mapou				○	○	●	●	●	●	○	anywhere	7	F
<i>Geniostoma ligustrifolium</i>	hangehange				○	○	●	○	●	●	○	wide range of tolerances	4	
<i>Melicytus ramiflorus</i>	mahoe				○	○	●	○	●	●	○	sheltered site initially	10	F
<i>Aristolelia serrata</i>	makomako/wineberry				○	○	●	○	●	○	●	not too wet or too dry	8	F
<i>Fuchsia excorticata</i>	kotukutuku				○	○	●	○	●	●	○	wet areas above flood level	12	F
<i>Hedycarya arborea</i>	porokaiwhiri/pigeonwood				●	○	●	○	○	●	○	sheltered site initially	12	F
<i>Leucopogon fasciculatus</i>	mingimingi				○	○	○	○	●	○	●	light shade only	5	F
<i>Nestegis lanceolata</i>	white maire				○	○	●	○	●	●	?	moist sheltered site	15	F
<i>Rhabdothamnus solandrii</i>	taurepo				○	○	●	○	○	●	○	steep banks, humid microclimate	2	
<i>Rhopalostylis sapida</i>	nikau				○	○	●	○	○	●	○	sheltered site	10	F
<i>Schefflera digitata</i>	pate				○	○	●	○	●	●	○	wet areas above flood level	8	F
<i>Lophomyrtus bullata</i>	ramarama					○	●	○	●	●			5	F

Grasses, sedges and ferns		0	10	15	flood	wet	moist	dry	sun	shade	frost	Planting tips		
<i>Carex secta</i>	purei				●	●	●	○	●	○	●	very boggy places	1-2	
<i>Carex virgata</i>	purei				●	●	●	○	●	○	●	very boggy places	1	
<i>Elatostema rugosum</i>	parataniwha				●	●	●	○	○	●	○	shady stream banks		
<i>Asplenium bulbiferum</i>	hen and chicken fern				○	○	●	○	○	●	○	shady stream banks		
<i>Pneumatopteris pennigera</i>	pakauroharoha /gully fern				○	○	●	○	○	●	○	shady stream banks		
<i>Carex dissita</i>	forest sedge				○	○	●	○	●	●	●	damp site		
<i>Carex uncinata</i>	hook sedge				○	●	●	○	○	●	?	damp site		
<i>Microlaena avenaceae</i>	bush rice grass				○	○	●	○	○	●	?	moist microclimate		
Climbers and epiphytes		0	0	10										
<i>Asplenium flaccidum</i>												attach to tree		
<i>Asplenium polyodon</i>	sickle spleenwort											attach to tree		
<i>Astelia solandri</i>	kahakaha											attach to tree		F
<i>Astelia hastata</i>	kahakaha											attach to tree		F
<i>Earina autumnalis</i>	Easter orchid											attach to tree		
<i>Earina mucronata</i>	peka-a-waka											attach to tree		
<i>Dendrobium cunninghamii</i>	winika											attach to tree		
<i>Microsorium pustulatum</i>	kowaowao											attach to tree		
<i>Microsorium scandens</i>	mokimoki											attach to tree		
<i>Pyrrosia eleagnifolia</i>	leather leaf fern											attach to tree		
<i>Freycinetia banksii</i>	kiekie				○	●	●	○	○	●	○	moist sheltered areas		F/N
<i>Parsonsia heterophylla</i>	kaihua/NZ jasmine				●	●	●	○	●	●	○	moist sheltered areas		N
<i>Passiflora tetrandra</i>	kohia/NZ passionfruit				●	○	●	●	●	○	●	open areas		F/N
<i>Metrosideros diffusa</i>	akatea				○	○	○	●	●	●	●	well drained soil or base of tree		N
<i>Metrosideros fulgens</i>	rata				○	○	○	●	●	●	○	well drained soil		N
<i>Metrosideros perforata</i>	akatea				○	○	○	●	●	●	●	well drained soil or base of tree		N
<i>Ripogonum scandens</i>	kareao/supplejack				●	○	●	○	●	●	○	moist shady areas		F

Orchid plants must never be collected from natural areas

# Western Waikato

## Wetlands

Wetlands occur wherever land is poorly drained. The waterlogged soil supports a shorter less productive plant community than better aerated soil. This provides an opportunity for species tolerant of living in permanently or seasonally wet conditions and more light demanding than other species of a similar stature.

Characteristic species		Planting			Plant tolerances/preferences							Planting tips		
Botanical Name	Common Name	Suggested number of plants per 100m <sup>2</sup>			flood	wet	moist	dry	sun	shade	frost	maximum height (approx) if over 1 metre	bird food type	
		open ground	established cover	mature stage										
<b>Colonisers</b>		<b>60</b>	<b>10</b>	<b>0</b>										
<b>Listed in order of tolerance to extreme coastal conditions</b>														
<i>Typha orientalis</i>	raupo				●	●	○	○	●	○	●	shallow open water	2	
<i>Phormium tenax</i>	harakeke / flax				●	●	●	●	●	○	●	very wet sunny areas	3	N
<i>Carex geminata</i>	cutty grass				●	●	●	●	●	○	●	wet sunny areas		
<i>Cyperus ustulatus</i>	giant umbrella sedge				●	●	●	●	●	○	●	wet sunny areas	2	
<i>Leptospermum scoparium</i>	manuka				○	●	●	○	●	○	●	wet sunny areas	8	N
<i>Machaerina rubiginosa</i>	baumea				○	●	●	○	●	○	●	wet sunny areas		
<i>Machaerina teretifolia</i>					○	●	●	○	●	○	●	wet sunny areas		
<i>Machaerina arthropophylla</i>					○	●	●	○	●	○	●	wet sunny areas		
<i>Carex subdola</i>	sedge					●	●	○	●	○	●	wet sunny areas		
<i>Cordyline australis</i>	ti kouka				●	●	●	●	●	○	●	most sites	12	F
<i>Coprosma robusta</i>	karamu				○	●	●	○	●	○	○	drier sites	4	F

<b>Canopy trees</b>					flood	wet	moist	dry	sun	shade	frost			
<b>Listed in order from most common to least common</b>		<b>15</b>	<b>15</b>	<b>0</b>										
<i>Cordyline australis</i>	ti kouka/cabbage tree				○	●	●	●	●	○	●	dominant in very boggy conditions	12	F
<i>Dacrycarpus dacrydioides</i>	kahikatea				○	○	●	○	●	○	●	drier sites in swamps	60	F
<i>Laurelia novae-zelandiae</i>	pukatea				○	○	●	○	●	●	○	drier, sheltered sites	35	
<i>Sophora microphylla</i>	kowhai				●	●	●	●	●	○	●	margins	10	N
<i>Syzygium maire</i>	swamp maire / maire tawaki					○	●	○	●	●	○	boggy, sheltered under other trees	16	F
<b>Understorey</b>					<b>Some species in this group are more likely to be found only in drier parts of the wetland</b>									
<b>Listed in order of most common to least common</b>		<b>25</b>	<b>25</b>	<b>15</b>										
<i>Coprosma tenuicaulis</i>	hukihuki				●	●	○	○	●	○	●	very wet open areas	4	F
<i>Coprosma propinqua</i>	mingimingi				●	●	●	○	●	○	●	very wet mostly open areas	5	F
<i>Coprosma rigida</i>					●	●	●	○	●	○	●	quite wet partial shade	5	F
<i>Coprosma rotundifolia</i>					●	●	●	○	●	○	●	quite wet partial shade	5	F
<i>Carpodetus serratus</i>	putaputaweta				○	●	●	○	●	●	○	consistently damp ground	10	F
<i>Myrsine australis</i>	mapou				●	○	●	○	●	●	○	almost anywhere	7	F
<i>Melicytus ramiflorus</i>	mahoe				○	○	●	○	○	●	○	not too dry or frosty	10	F
<i>Melicytus micranthus</i>					●	○	●	○	○	●	○	shady flood prone areas	10	F
<i>Streblus heterophyllus</i>	turepo				●	○	●	○	○	●	○	shady flood prone areas	10	F
<i>Dicksonia squarrosa</i>	wheki				?	○	●	○	○	●	●	consistently damp ground	8	
<i>Cyathea dealbata</i>	ponga				?	○	●	○	○	●	○	consistently damp ground	10	
<i>Cyathea medullaris</i>	mamaku				?	○	●	○	○	●	○	consistently damp ground	15	
<i>Pseudopanax crassifolius</i>	horoeka / lancewood				?	●	●	●	●	○	●	low fertility soil	13	F
<b>Grasses, sedges, ferns and ground covers</b>														
<b>Listed in order from wettest to driest habitat</b>		<b>0</b>	<b>10</b>	<b>15</b>										
<i>Eleocharis sphacelata</i>	bamboo spike-sedge				?	●	○	○	●	○	●	water up to 500 mm deep		
<i>Machaerina articulata</i>	wiwi				○	●	○	○	●	○		water up to 500 mm deep		
<i>Bolboschoenus fluviatilis</i>	kukuraho				○	●	○	○	●	○	●	open, very wet swampy ground, deciduous		
<i>Carex secta</i>	purei				○	●	○	○	●	○	●	open, very wet swampy ground	1-2	
<i>Carex virgata</i>	purei				○	●	○	○	●	○	●	open, very wet swampy ground	1	
<i>Gahnia xanthocarpa</i>	giant sedge				○	●	○	○	●	●	●	shaded, very wet swampy ground	1.5	
<i>Blechnum minus</i>	swamp kiokio				?	●	○	○	○	●	●	shaded, very wet swampy ground	1	

