

# Planting guide for Meremere Basin



This planting guide is designed to assist anyone undertaking ecological restoration on the low lying land north of Huntly between the western coastal hills and the Taupiri and Hapuakohe ranges. It is one in a series of planting guides covering different ecosystems in the Waikato District, including sections of the Waikato and Waipa rivers, western Waikato ranges and low hills, peat lakes and kahikatea remnants.

The species lists are not intended to be a comprehensive description of the primeval forests that once existed at a site 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 swampy low lying land of the Meremere basin

A series of riverine lakes are found in the flood plain of the Lower Waikato River around Meremere. The margins of these lakes are swampy, being fed by river water rather than the peat forming margins normally associated with lakes in the Hamilton Basin. The assemblage of plant species recommended reflects this difference. Although similar to kahikatea forest in the Hamilton Basin and further south, kahikatea forest here is also influenced by the slightly milder climate.

Two distinct planting zones are identified. Each zone has its own assemblage of plants grouped into five categories – colonisers; canopy trees; understorey 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 can be restored. Not all categories of plants are suitable for planting in the initial stages of restoration e.g. climbers and epiphytes, but their eventual inclusion will give resilience to a plant community and enhance the habitat for yet other species.

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.

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.

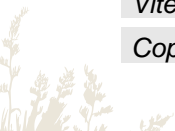


# Meremere Basin

## Kahikatea dominated low lying ground

Alluvial flats and swampy ground along the margins of waterways, lakes and wetlands favour a community of plants adapted to poorly drained soil and occasional flooding

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 native canopy	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 kōuka/cabbage tree				●	●	●	●	●	○	●	open areas	12	F/N	
<i>Hoheria sextylosa</i>	houhere / lacebark				●	○	●	○	●	○	●	boggy ground to lower slopes	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 sites		15	15	0	<i>Canopy trees are long-lived, tall and spreading, but slow to establish</i>										
<i>Dacrycarpus dacrydioides</i>	kahikatea				○	○	●	○	●	○	●	sunny moist areas	60	F	
<i>Laurelia novae-zelandiae</i>	pukatea				●	●	●	○	○	○	○	sheltered areas	35		
<i>Prumnopitys taxifolia</i>	matai				●	○	●	○	●	●	●	wide range of tolerances	25	F	
<i>Sophora microphylla</i>	kowhai				●	●	●	●	●	○	●	forest margins	10	N	
<i>Podocarpus tōtara</i>	totara				●	○	●	○	●	○	●	anywhere	30	F	
<i>Elaeocarpus hookerianus</i>	pokaka				●	○	●	○	●	●	?	moist sheltered site	12	F	
<i>Alectryon excelsus</i>	titoki				○	○	●	○	○	●	○	sheltered areas	10	F	
<i>Beilschmiedia tawa</i>	tawa				○	○	●	○	○	●	○	sheltered areas	20	F	
<i>Vitex lucens</i>	puriri				○	○	●	○	●	●	○	sheltered from frost	20	N/F	
<i>Coprosma arborea</i>	mamangi				○	○	○	●	●	○	○	well drained sloping ground	10	F	



<b>Understorey Listed in order from wettest to driest sites</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 propinqua</i>	mingimingi				●	●	●	○	●	○	●	wet and seasonally flooded areas	5	F
<i>Coprosma rigida</i>					●	●	●	○	●	○	●	wetter areas	5	F
<i>Coprosma rotundifolia</i>					●	●	●	○	●	○	●	wetter areas	5	F
<i>Pseudopanax crassifolius</i>	horoeka/lancewood				?	●	●	●	●	○	●	exposed areas	13	F
<i>Streblus heterophyllus</i>	turepo				●	○	○	○	○	●	●	moist shady stream banks	6	F
<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				○	○	●	○	●	○	●	open areas, not too wet or too dry	8	F
<i>Fuchsia excorticata</i>	kotukutuku				○	○	●	○	●	●	○	wet areas above flood level	12	F
<i>Coprosma areolata</i>					○	○	●	○	●	●	●	wet or dry, shade or sunny	4	F
<i>Hedycarya arborea</i>	porokaiwhiri/pigeonwood				●	○	●	○	○	●	○	sheltered sites initially	12	F
<i>Leucopogon fasciculatus</i>	mingimingi				○	○	○	○	●	○	●	light shade	5	F
<i>Nestegis lanceolata</i>	white maire				?	○	●	●	●	●	●	most areas	15	F
<i>Rhopalostylis sapida</i>	nikau				?	?	●	○	○	●	○	sheltered	10	F
<i>Schefflera digitata</i>	pate				○	○	●	○	●	●	○	Margins/wet areas above floods	8	F
<b>Grasses, sedges, ferns and ground covers. Listed in order from wettest sites</b>		<b>0</b>	<b>10</b>	<b>15</b>	<b><i>These plants are well adapted to situations where little else grows under taller vegetation</i></b>									
<i>Carex secta</i>	purei				●	●	●	○	●	○	●	very wet areas	1-2	
<i>Carex virgata</i>	purei				●	●	●	○	●	○	●	very wet areas	1	
<i>Gahnia xanthocarpa</i>	giant sedge				○	●	●	○	●	●	●	shaded, very wet areas	1.5	
<i>Lobelia angulata</i>	pratia				●	●	●	○	●	●	●	well established sites		
<i>Asplenium bulbiferum</i>	hen and chicken fern				○	○	●	○	○	●	○	damp shady sites		
<i>Pneumatopteris pennigera</i>	pakauroharoha /gully fern				○	○	●	○	○	●	○	damp shady sites		
<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 /moist micro-climate		

		0	0	10	flood	wet	moist	dry	sun	shade	frost	Planting tips			
<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>	kahakaha											attach to tree			
<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>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 not be collected from natural areas

# Meremere Basin

## Riverine lakes swampy margins

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 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>					<b>This group is quick to establish in a wetland but some species may eventually be outcompeted by taller vegetation in drier parts of the wetland</b>										
<b>Listed in order from wettest to driest habitat</b>		<b>60</b>	<b>10</b>	<b>0</b>											
<i>Typha orientalis</i>	raupo				●	●	◐	○	●	○	●	shallow open water	2		
<i>Phormium tenax</i>	harakeke / flax				●	●	●	●	●	○	●	very wet sunny areas	3		
<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		
<i>Machaerina rubiginosa</i>					○	●	●	○	●	○	●	wet sunny areas			
<i>Machaerina teretifolia</i>					○	●	●	○	●	○	●	wet sunny areas			
<i>Machaerina arthropylla</i>					○	●	●	○	●	○	●	wet sunny areas			
<i>Carex subdola</i>						●	●	○	●	○	●	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>					<b>Stunted and sparse in a wetland. Density will vary.</b>										
<b>Listed in order from high to low tolerance of wet conditions</b>		<b>&lt;15</b>	<b>&lt;15</b>	<b>0</b>											
<i>Cordyline australis</i>	ti kouka				○	●	●	●	●	○	●	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>Syzygium maire</i>	swamp maire / maire tawaki						○	●	○	●	●	○	boggy very sheltered sites	16	F
<i>Sophora microphylla</i>	kowhai					●	●	●	●	●	○	●	margins	10	N
<b>Understorey</b>													<b>Planting tips</b>		
<b>Listed in order from wettest to driest ground</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>	<i>Some species are more likely to be found only in drier parts of the wetland</i>			
<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>Pseudopanax crassifolius</i>	horoeka / lancewood				?	●	●	●	●	○	●	low fertility soil	13	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		
<b>Grasses, sedges ferns and ground covers</b>		<b>0</b>	<b>10</b>	<b>15</b>	<i>In a wetland there may be no marked succession sequence. Many of these species may be planted on a bare site yet persist as the plant community matures.</i>										
<i>Eleocharis sphacelata</i>					?	●	○	○	●	○	●	water depth to 500 mm			
<i>Schoenoplectus tabernaemontani</i>	kapungawha / lake clubrush				●	●	○	○	●	○	●	water depth to 500mm with fluctuations			
<i>Machaerina articulata</i>	wiwi				○	●	○	○	●	○		water depth to 500 mm			
<i>Bolboschoenus fluviatilis</i>	kukuraho/marsh clubrush				○	●	○	○	●	○	●	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	2		
<i>Astelia grandis</i>	swamp astelia				?	●	○	○	○	●	●	shaded, very wet swampy ground	1		
<i>Blechnum minus</i>					?	●	○	○	○	●	●	shaded, very wet swampy ground	1		
<i>Eleocharis acuta</i>					?	●	○	○	●	○	●	open, very wet swampy ground			
<i>Sparganum subglobosum</i>	burr reed				?	●	○	○	●	○	●	open, very wet swampy ground			
<i>Machaerina tenax</i>	baumea				●	●	○	○	○	●	●	shaded, very wet swampy ground			

<i>Elatostema rugosum</i>	parataniwha				●	●	○	○	○	●		very shaded wet areas		
<i>Dianella haemata</i>	swamp turutu					●	●	○	●	○	●	open, wet areas		F
<b>Climbers and epiphytes</b>					<b><i>These species can be planted if there are established trees to support them</i></b>									
<i>Freycinetia banksii</i>	kiekie				?	●	●	○	●	●	●	under established trees		F
<i>Rubus australis</i>	swamp lawyer				?	●	●	?	●	●	?	under established trees		F

*This guide is based on the best knowledge available at time of publication. Experience and research can change over time and the information may require refinement in the future.*