

Planting Guide for Lower Waipa River

Whatawhata to Ngaruawahia



This planting guide is designed to assist anyone undertaking ecological restoration along the Waipa River from Whatawhata to Ngaruawahia i.e. the stretch of river before it enters the Waikato River at Ngaruawahia. It is the fourth in a series of guides, the other three covering the stretch of the Waikato River from just south of Hamilton out to the sea.

The lists are not intended to be a comprehensive description of the primeval forests along the river 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.

4. Planting guide for Waipa River – Whatawhata to Ngaruawahia

The Waipa River cuts through deep pumice soil deposited when the Waikato River flowed over the same landscape many years before. This has created steep pumice banks and areas of free-draining riverine forest. In places, frequent flooding has deposited silt which has built up, forming a barrier to drainage and resulting in numerous small fertile back swamps and riverine wetlands. 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.

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.

The approximate final height of a plant is given where it is over a metre.



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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 conditions, ◐ 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.

Planting to attract wildlife

The plants value as bird food is indicated by an N for nectar and F for fruit and seeds. The table below sets out the main food requirements for some of the native birds that live in bush.

Species	Fruit/seeds	Nectar	Insects	Foliage	Other
Bellbird	*	*	*		
Fantail			*		
Grey warbler			*		
Kaka	*	*	*		tree sap
Kakariki	*	*	*		
Kereru	*			*	flowers
Kingfisher			*		fish, rodents, lizards
Kiwi	*		*		spiders, worms, koura
Shining cuckoo			*		
Morepork			*		rodents, birds, lizards
Robin			*		
Tui	*	*	*		
Wax/white/silvereye	*	*	*		
Whitehead			*		

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.



Whatawhata to Ngaruawahia

Steep pumice banks

The Waipa River cuts through deep pumice soil deposited when the Waikato River flowed over the same landscape many years before. Floods in this section frequently exceed seven metres and the first three metres above the summer level supports mainly sedges, which lose their leaves during winter flooding. Kahikatea dominate the upper flood zone. A similar plant community extends up the numerous streams which have cut through the pumice soil on their way to the river.

Characteristic species		Planting			Plant tolerances / preferences							Planting tips		maximum height (approx) if over 1 metre	food type
Botanical name	Common name	open ground	established cover	mature stage	flood	wet	moist	dry	sun	shade	frost	Look for wet spots where trees may do particularly well in dry weather			
Colonisers Listed in order from earliest establishing to longest life		60	10	0	<i>Colonisers are typically quick growing, tolerant of a wide range of environments and effective and early dispersers</i>										
<i>Veronica stricta</i>	koromiko				○	○	●	●	●	○	●	above flood level	4		
<i>Carex geminata</i>	cutty grass				●	●	●	○	●	○	●	wet open area	1.2		
<i>Coprosma robusta</i>	karamu				○	●	●	●	●	○	○	most areas	5		
<i>Cordyline australis</i>	ti kōuka/cabbage tree				○	●	●	●	●	○	●	most areas	12	F/N	
<i>Kunzea robusta</i>	kanuka				○	○	●	●	●	○	●	drier area	16	N	
<i>Coriaria arborea</i>	tutu				●	○	●	●	●	●	●	well drained moist soil	8		
<i>Aristolelia serrata</i>	makomako/wineberry				○	○	●	○	●	○	●	quick growing, avoid too wet or dry	10	F	
Canopy trees Listed in order from most common to least common		15	15	0	<i>Canopy trees are long-lived, tall and spreading, but slow to establish</i>										
<i>Dacrycarpus dacrydioides</i>	kahikatea				●	●	●	○	●	○	●	wetter soil	60	F	
<i>Laurelia novae-zelandiae</i>	pukatea				●	●	●	○	●	○	○	sheltered area	35		
<i>Podocarpus totara var. totara</i>	tōtara				○	○	●	○	●	○	●	upper bank	30	F	
<i>Plagianthus regius</i>	manatu/ribbonwood				●	●	●	○	●	○	●	very quick growing	15		
<i>Hoheria sextylosa</i>	lacebark				○	●	●	○	●	○	●	cope with only short term floods	6		
<i>Prumnopitys taxifolia</i>	matai				●	○	●	○	●	●	●	level ground	35	F	
<i>Beilschmiedia tawa</i>	tawa				○	○	●	●	○	●	○	sheltered and shaded area	20	F	

<i>Knightsia excelsa</i>	rewarewa				○	○	●	●	●	●	○	steep sloping ground	30	N
<i>Alectryon excelsus</i>	titoki				○	○	●	●	○	●	○	sheltered area	10	F
<i>Sophora microphylla</i>	kowhai				○	○	●	●	●	○	●	margins, well drained, mounds	10	N
<i>Syzygium maire</i>	maire tawake				○	●	●	○	○	●	○	sheltered always boggy, seepage	15	
<i>Dysoxylum spectabile</i>	kohekohe				○	○	●	○	○	●	○	sheltered area	15	F
<i>Phyllocladus trichomanoides</i>	tanekaha				○	○	●	○	●	○	○	steeper moist ground	20	
<i>Dacrydium cupressinum</i>	rimu				○	○	○	●	●	●	●	not common	35	F
Understorey Listed in order from wettest to driest habitat		25	25	15	flood	wet	moist	dry	sun	shade	frost	Planting tips		
<i>Coprosma propinqua</i>	mingimingi				●	●	○	○	●	○	●	open wet area	7	F
<i>Coprosma rigida</i>					●	●	●	●	●	○	●	anywhere	5	F
<i>Coprosma rotundifolia</i>					●	●	●	○	●	●	○	anywhere	4	F
<i>Streblus heterophyllus</i>	turepo				○	○	●	○	○	●	●	sheltered area	12	F
<i>Melicytus micranthus</i>	manakura/swamp mahoe				●	○	●	○	●	●	○	flood zone, sheltered	5	F
<i>Dicksonia squarrosa</i>	wheki				○	●	●	●	●	●	●	damp shade	2-8	
<i>Myrsine australis</i>	mapou				○	○	●	●	●	●	○	anywhere	7	F
<i>Melicytus ramiflorus</i>	mahoe				○	○	●	○	●	●	○	sheltered area	10	F
<i>Geniostoma ligustrifolium</i>	hangehange				○	○	●	○	●	●	○	above flood zone, sheltered	4	
<i>Piper excelsum (syn, Macropiper)</i>	kawakawa				○	○	●	●	○	●	○	above flood zone	7	F
<i>Hedycarya arborea</i>	porokaiwhiri/pigeonwood				○	○	●	○	○	●	○	sheltered and moist	12	F
<i>Cyathea dealbata</i>	ponga				○	○	●	●	●	●	○	damp shade	10	
<i>Cyathea medullaris</i>	mamaku				○	○	●	●	●	●	○	damp shade	20	
<i>Coprosma lucida</i>	shining karamu				○	○	○	●	●	●	○	well drained	5	F
<i>Leucopogon fasciculatus</i>	mingimingi				○	○	●	●	●	○	●	above flood zone, light shade	5	F
<i>Brachyglottis repanda</i>	rangiora				○	○	●	○	○	●	○	above flood zone, light shade	6	
<i>Olearia ranii</i>	heketara				○	○	●	○	○	●	○	above flood zone, light shade	8	
<i>Nestegis lanceolata</i>	white maire				○	○	●	●	●	●	○	moist but well drained	13	F
<i>Melicope simplex</i>	poataniwha				○	○	●	○	○	●		slow growing, variety of soil types	8	F
<i>Pseudopanax crassifolius</i>	horoeaka/lancewood				○	○	●	○	●	○	●	requires some shelter	15	

Grasses, sedges, ferns, and ground covers		0	10	15	flood	wet	moist	dry	sun	shade	frost	Planting tips		
Listed in order from wettest to driest habitat		0	10	15										
<i>Cyperus ustulatus</i>	giant umbrella sedge				●	●	●	○	●	○	●	wet open areas	2	
<i>Carex dissita</i>	forest sedge				○	●	●	○	●	●	●	damp shady area		
<i>Blechnum chambersii</i>	lance fern				●	○	●	○	○	●	○	damp shady bank		
<i>Adiantum cunninghamii</i>	maiden hair fern				●	○	●	●	○	●	○	steep damp bank		
<i>Austroderia fulvida</i>	toe toe				●	●	●	●	●	○	●	steep exposed area	1.5	
<i>Carex solandri</i>	forest sedge				○	○	●	○	○	●	●	damp shady area		
<i>Carex uncinata</i>	hook sedge				○	○	●	○	○	●	●	damp shady area		
<i>Blechnum parrisiae</i>	rasp fern				○	○	●	●	●	●	○	dry shade to semi-shade		
Climbers and epiphytes		0	0	10	<i>These plants take advantage of trees to get their leaves up into the sunlight</i>									
<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>Freycinetia banksii</i>	kiekie				○	○	●	○	○	●	○	damp shaded place		N
<i>Astelia hastata</i>	kahakaha				○	○	●	●	●	●	○	Raised soil or attach to tree fork		
<i>Astelia solandri</i>	kaiwharawhara				○	○	●	●	●	●	○	well drained soil or attach to tree		F
<i>Asplenium flaccidum</i>	hanging spleenwort				○	○	●	●	●	●	○	rich soil or attach to tree		
<i>Asplenium polyodon</i>	sickle spleenwort				○	○	●	●	●	●	○	attach to tree		
<i>Microsorium pustulatum</i>	kowaowao/hounds tongue fern				○	○	●	●	●	●	○	attach to tree		
<i>Microsorium scandens</i>	mokimoki				○	○	●	●	●	●	○	attach to tree		
<i>Pyrrosia eleagnifolia</i>	leather leaf fern				○	○	●	●	●	●	○	best left to germinate naturally		
<i>Clematis paniculata</i>	puawananga				○	○	●	○	○	●	○	moist well drained cool roots		
<i>Passiflora tetrandra</i>	kohia/NZ passionfruit				●	○	●	●	●	○	●	open area		F
<i>Parsonsia heterophylla</i>	kaihua/NZ jasmine				●	●	●	○	●	●	○	damp shaded place		
<i>Rubus cissoides</i>	tātārāmoa/bush lawyer				●	○	●	●	●	○	○	well drained margin		F
<i>Ripogonum scandens</i>	kareao/suplejack				●	●	●	○	●	●	○	damp shady place		F

Whatawhata to Ngaruawahia

Permanent Wetlands

Where streams cut through the pumice soil and flow into the Waipa River permanent wetlands frequently occur where soil is waterlogged year round but because these wetlands are above the river level, the stems and foliage of plants are not as affected by annual flooding as are the actual banks of the river.

Characteristic species		Planting			Plant tolerances / preferences							Planting tips			
Botanical name	Common name	Suggested number of plants per 100 m ²			○ unlikely to survive ◐ may survive but not thrive ● well adapted to conditions							Plant frost sensitive species under willow or other trees	maximum height (approx) if over 1 metre	food type	
		open ground	established cover	mature stage	flood	wet	moist	dry	sun	shade	frost				
Colonisers					<i>Colonisers are typically quick growing, tolerant of a wide range of environments and effective and early dispersers</i>										
Listed in order from wettest to driest habitats		60	10	0											
<i>Carex geminata</i>	cutty grass				◐	●	◐	○	●	○	●	wet open area	1-2		
<i>Cyperus ustulatus</i>	giant umbrella sedge				●	●	●	◐	●	○	●	wet open area	2		
<i>Cordyline australis</i>	ti kōuka/cabbage tree				◐	●	●	●	●	◐	●	most areas	12	F/N	
<i>Coprosma robusta</i>	karamu				◐	●	●	●	●	◐	◐	drier site	5	F	
Canopy trees					<i>Canopy trees are long-lived, tall and spreading, but slow to establish</i>										
Listed in order from wettest to driest habitat		10	15	0											
<i>Dacrycarpus dacrydioides</i>	kahikatea				●	●	●	◐	●	○	●	drier sites	60	F	
<i>Laurelia novae-zelandiae</i>	pukatea				●	●	●	◐	◐	●	○	sheltered areas	35		
<i>Sophora microphylla</i>	kowhai				◐	◐	●	●	●	○	●	margins, well drained, mounds	10	F/N	
<i>Syzygium maire</i>	maire tawake				◐	●	●	○	◐	●	○	sheltered always boggy	15		
<i>Elaeocarpus hookerianus</i>	pokaka	0	0	1	●	◐	●	○	●	◐	●	level ground	14	F	
<i>Elaeocarpus dentatus</i>	hinau	0	0	1	○	○	●	◐	◐	●		difficult to establish	18		

Understorey															
Listed in order from wettest to driest habitat		20	25	15	flood	wet	moist	dry	sun	shade	frost	Planting tips			
<i>Coprosma tenuicaulis</i>	hukihuki/swamp coprosma				●	●	○	○	●	○	●	very boggy to damp place	3	F	
<i>Coprosma propinqua</i>	mingimingi				●	●	○	○	●	○	●	very boggy to damp ground	7	F	
<i>Coprosma rigida</i>					●	●	●	●	●	○	●	anywhere	5	F	
<i>Coprosma rotundifolia</i>					●	●	●	○	●	●	○	anywhere	4	F	
<i>Pennantia corymbosa</i>	kaikomako				○	○	●	○	●	●	●	most areas	12	F/N	
<i>Streblus heterophyllus</i>	turepo				○	○	●	○	○	●	●	sheltered site	10		
<i>Fuchsia excorticata</i>	kotukutuku/tree fuchsia				○	○	●	○	●	●	○	damp soil above floods	10	F/N	
<i>Schefflera digitata</i>	pate/patete				○	○	●	○	●	●	○	damp soil above floods	8	F	
<i>Myrsine australis</i>	mapou				○	○	●	●	●	●	○	most areas	8	F	
<i>Melicytus ramiflorus</i>	mahoe				○	○	●	○	●	●	○	sheltered drier area	10	F	
<i>Geniostoma ligustrifolium</i>	hangehange				○	○	●	○	○	●	○	sheltered above flooding	4		
<i>Dicksonia squarrosa</i>	wheki				○	●	●	●	●	●	●	damp shade	2-8		
<i>Pseudopanax crassifolius</i>	horoeaka/lancewood				○	○	●	○	●	○	●	requires some shelter	15		
Grasses, sedges, ferns, lilies and ground covers					<i>These plants are well adapted to situations where nothing much else grows, sometimes under taller vegetation, sometimes in boggy or very wet places</i>										
Listed in order from wettest to driest habitat		10	10	15											
<i>Carex secta</i>	purei/pukio				○	●	●	○	●	○	●	wet ground	1-2		
<i>Carex virgata</i>	purei/pukio				○	●	●	○	●	○	●	wet ground	1		
<i>Carex lessoniana</i>	rautahi/forest sedge				○	●	●	○	●	○	●	wet ground	1		
<i>Gahnia xanthocarpa</i>	giant sedge				●	●	○	○	●	●	●	boggy sun or shade	1.5		
<i>Astelia grandis</i>	swamp astelia				●	●	●	○	●	●	●	boggy shaded place	1		
<i>Machaerina sinclarii</i>	strap sedge				●	●	●	○	○	●	●	damp shade			
<i>Elatostema rugosum</i>	parataniwha	0			○	●	○	○	○	●	○	moist shady place			
<i>Carex dissita</i>	forest sedge				○	○	●	○	○	●	●	damp sometimes shaded place			
<i>Carex solandri</i>	forest sedge				○	○	●	○	○	●	●	damp semi-shade			
<i>Carex uncinata</i>	hook sedge				○	○	●	○	○	●	●	damp semi-shade			

		0	0	10	flood	wet	moist	dry	sun	shade	frost	Planting tips			
Climbers and epiphytes															
<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>Freycinetia banksii</i>	kiekie				◐	◐	●	◐	◐	●	◐	damp sometimes shaded place			N
<i>Astelia hastata</i>	kahakaha				○	○	●	●	●	●	○	raised soil or attach to tree fork			
<i>Astelia solandri</i>	kaiwharawhara				○	○	●	●	●	●		well drained soil or attach to tree			F
<i>Asplenium flaccidum</i>	hanging spleenwort				○	○		●	●	●	○	rich soil or attach to tree			
<i>Asplenium polyodon</i>	sickle spleenwort				○	○	●	●	●	●	○	attach to tree			
<i>Microsorium pustulatum</i>	kowaowao/hounds tongue fern				○	○	●	●	●	●	○	attach to tree			
<i>Microsorium scandens</i>	mokimoki				○	○	●	●	●	●	○	attach to tree			
<i>Pyrrosia eleagnifolia</i>	leather leaf fern				○	○	●	●	●	●	○	best left to germinate naturally			
<i>Parsonsia heterophylla</i>	kaihua/NZ jasmine				●	●	●	○	●	◐	◐	damp shady place			
<i>Rubus australis</i>	tätärämoa/swamp lawyer				●	●	●	●	●	◐	◐	damp sometimes shaded place			F

Take care to ensure plants are ecosourced from natural areas