STREAMSIDE PLANTING GUIDE

What to plant and how to maintain plants along freshwater streams in Nelson

Nelson's Waterway Enhancement Programme

This Streamside Planting Guide has been developed to encourage gardeners, owners of larger properties, community groups, schools, landscape professionals and nurseries to help restore the native vegetation that is unique to Nelson's waterways.

Revegetating Nelson's waterways aims to:

- Enhance the appearance of the waterway
- Provide shade and habitat for birds, fish, lizards and insects
- Prevent erosion
- Improve water quality
- Encourage seed formation for further development

The Streamside planting guide will help you know what to plant where, and how to plant and maintain your streamside.

This brochure has been developed by:
Shannel Courtney, Department of Conservation
Mike Ward MP: Icon drawings

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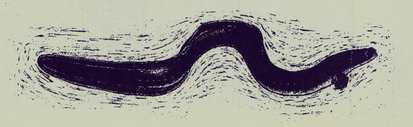
For more information, contact:
Recreation and Community Services, Nelson City Council
Environmental Policy, Nelson City Council
Department of Conservation

10 STEPS TO PLANTING AND MAINTAINING YOUR STREAMSIDE

1. Get to know your stream, and start planning

- Look at your stream over different seasons and see what opportunities there are for improving it.
- Characterise the stretch of river bank by referring to the stream waterway profiles and notes on this brochure. Use the *'Living Heritage - growing native plants in Nelson'* booklet as a guide.
- Organise resources including labour, for site preparation, planting and important on-going maintenance - don't bite off more than you can chew.



2. Seek advice on Resource consents and design

- Get in touch with Council Planning and Consents staff (tel: 546 0200) for further advice and check if you require resource consents for work, especially if you are looking at regrading banks or working with retaining walls.
- Any development within a defined 'setback' will require a Nelson City Council resource consent.
- Any disturbance to the bed of a river will require a Nelson City Council resource consent.
- For design assistance consult the Yellow Pages for the list of NZILA landscape architects.

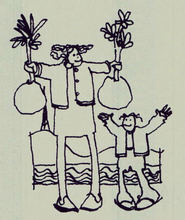
3. Prepare a planting plan

- For your stream area, identify the different vegetation zones illustrated in the stream diagrams overleaf. Consider slope, distance from stream, how damp the area is and how your stream flows throughout the year.
- Compile a list of plant species for each zone identified along the streambank.
- Space plants accordingly in the zone they belong to and the size they grow to. You will need approximately one plant per square metre. Rushes, small sedges, flaxes and ferns can be planted up to three per square metre.
- Near the water's edge place tussock, flaxes, reeds with shrubs and small trees located above these.
- On higher terraces and banks, plant tree and shrub species in groups.
- Remember that in a flood grasses, rushes and flaxes will bend with the water's flow while shrubs and trees could cause blockages.

4. Order plants well in advance

- Order plants well in advance of planting. Select a nursery specialising in native plants that can guarantee they were sourced locally in Nelson.
- If you hold plants before planting, make sure they are watered every day otherwise they may become stressed and die.

5. Planting times



- Plant appropriate species down on the water's edge/margin during summer. Other species should be planted during autumn (hardy plants) or spring (frost-tender plants).

- Some ground cover plants, slow growing, and/or frost sensitive species should be planted after some initial cover has established and dense grass has been managed (i.e. 1-2 years after first plantings).

6. Prepare the site

- Prepare the site well in advance of planting. Remove invasive weeds, including convolvulus, ivy, periwinkle, pampas grass, grey willow, alder, yellow flag iris, old man's beard and banana passionfruit.
- Clear all vegetation for about 500mm radius around each planting position.
- Fork the subsoil to improve drainage if it is heavily compacted. Apply soil conditioner if topsoil is degraded.

7. Setting out

- Ensure that the plants have had a good soak then set them out in their correct zones, remembering to space plants according to how large they will grow (see stream profile diagrams). Ensure the plants do not sit in the sun for a long time.

8. Planting

- Set the plant into a bed of soft, worked soil at the bottom of the hole, and repack crumbled soil around the root mass tightly to prevent air gaps.
- On dry, steep sites, dig the plant into a deep hole so that there is a hollow left in the ground around the stem to catch the rain.
- On wet sites, plant in a shallower hole so that the top of the root mass and associated soil is at ground level or even slightly mounded above it in permanently saturated conditions. This allows some roots to breathe and not drown.
- Ensure plants within the waterway are well-planted, and compacted around their base. A stone placed on the rootball may help to anchor the plant and assist with moisture retention.
- Give the plants and the surrounding dry ground a good watering after planting. Where possible, stake plants so they are easily identified.

9. Fertiliser and mulch

- For poor soils apply slow-release fertiliser to each plant and spread short-term fertiliser (e.g. super-phosphate) onto the ground after the planting and before the mulching.
- It is best to fertilise in the second year after planting, as plant roots are not well developed enough to utilise fertiliser prior to this.
- On dry sites, mulch with bark chips (up to 10cm depth), newspaper, woollen mats, or other degradable materials such as carpet underlay (not rubberised underlay).
- Do not use mulch on wet sites or anywhere near the water flow, as mulch is likely to be washed away, and may cause stream blockages.

10. Establishment and on-going maintenance

- Regularly check on the plants' health for several years after establishment.
- Remember that plants on dry banks will survive and thrive if watered regularly in summer. Replant areas where plants may have died.
- Weeding around plants is essential to avoid competition and stress. This should be carried out on a monthly basis or more frequently as required.
- Nearer the water, careful weed control is needed on an on-going basis until the area is self-maintaining, or until the plantings have overtopped the grass.
- Monitor the growth of your streamside - enjoy how your site will thrive, develop, attract wildlife, and become self maintaining.

WHAT TO PLANT WHERE

Ferns and Ground Covers

			Plant Tolerances					Planting Zones			
			Sun	Shade	Wet	Dry	Wind	Margin/stream edge	Lower bank	Upper bank	Crest/upper terrace
1	gossamer grass, bamboo tussock	*Anemanthele lessoniana*	■	◪	□	■	■				✓
2	harakeke, NZ flax	*Phormium tenax*	■	□	■	◪	■		✓	✓	
3	hounds tongue fern	*Microsorum pustulatum*	□	■	◪	◪	□			✓	✓
4	kahakaha, bush lilly	*Astelia fragrans*	◪	■	◪	◪	□			✓	✓
5	kapungawha, lake club rush	*Schoenoplectus tabernaemontani*	■	□	■	□	■	✓			
6	kiokio	*Blechnum novae-zelandiae*	◪	■	■	■	□	✓	✓	✓	
7	oioi	*Leptocarpus similis (= Apodasmia)*	■	□	■	□	■	✓			
8	purei	*Carex virgata*	■	◪	■	□	◪	✓			
9	makura, tussock sedge	*Carex geminata*	■	□	■	□	□	✓			
10	mikoikoi, NZ iris	*Libertia mooreae*	■	◪	□	■	■		✓	✓	✓
11	pukio, tussock sedge	*Carex secta*	■	◪	■	□	◪	✓			
12	purua grass	*Bolboschoenus caldwellii*	■	□	■	□	□	✓			
13	South Island toetoe	*Cortaderia richardii*	■	□	■	■	■	✓	✓	✓	✓
14	spike-sedge	*Eleocharis acuta*	■	□	■	□	□	✓			
15	streamside snow-grass	*Chionochloa conspicua*	■	◪	◪	□	□	✓			
16	swamp kiokio	*Blechnum minus*	◪	◪	■	□	□	✓			
17	blue rush	*Juncus sarophorus*	■	□	◪	□	□		✓		
18	tussock rushes	*Juncus australis*	■	□	◪	□	□		✓		
19	tussock rushes	*Juncus pallidus*	■	□	■	□	□	✓			
20	upoko-tangata, umbrella sedge	*Cyperus ustulatus*	■	□	◪	◪	■		✓	✓	✓
21	whaririki, coastal/mountain flax	*Phormium cookianum (dry sunny slopes)*	■	□	□	■	■		✓	✓	

✓ = coastal only

HOW TO USE THIS PAGE

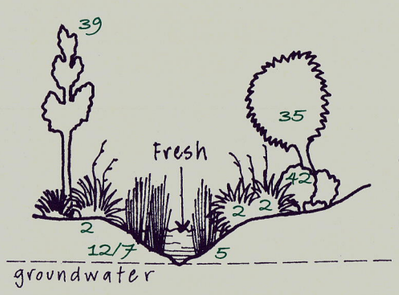
- Look at the RIVER AND STREAM PROFILES and decide which zone you want to plant *(e.g. lower bank)*.
- Go to the top of the tick table and find your chosen PLANTING ZONE *(e.g. lower bank)*.
- Select the plants down the column which get a tick *(e.g. lower bank includes harakeke, NZ flax in 'Ferns and Groundcover' and mingi mingi in 'Shrubs and Trees')*.
- Match the key number of your plant *(e.g. harakeke, NZ flax is No.2)* with the number in the RIVERS AND STREAMS PROFILES. This is the plant's form and its preferred position(s) for planting.
- Check PLANT TOLERANCES in the small boxes, so that you get the shade, moisture and shelter conditions just right for the plants you have selected.

FURTHER PLANT LISTS

- To find out more about planting native species within the Nelson area contact Nelson City Council or Department of Conservation for '*Living Heritage - Growing native plants in Nelson*'. This guide provides a broad list of native plants that are suitable for restoring Nelson's vegetation.

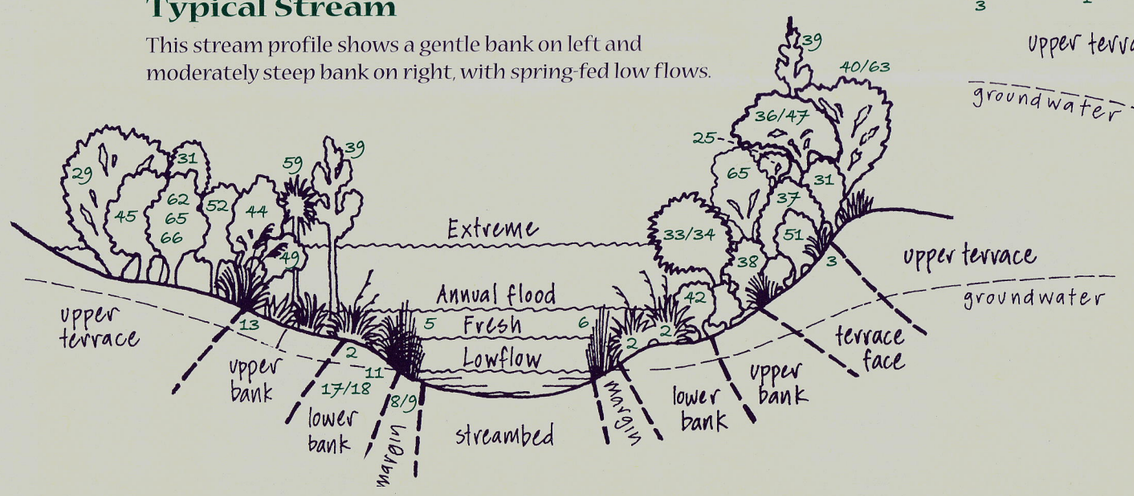
RIVER AND STREAM PROFILES

These profiles show the sequence of native plants best suited to each zone. Scale has been exaggerated.



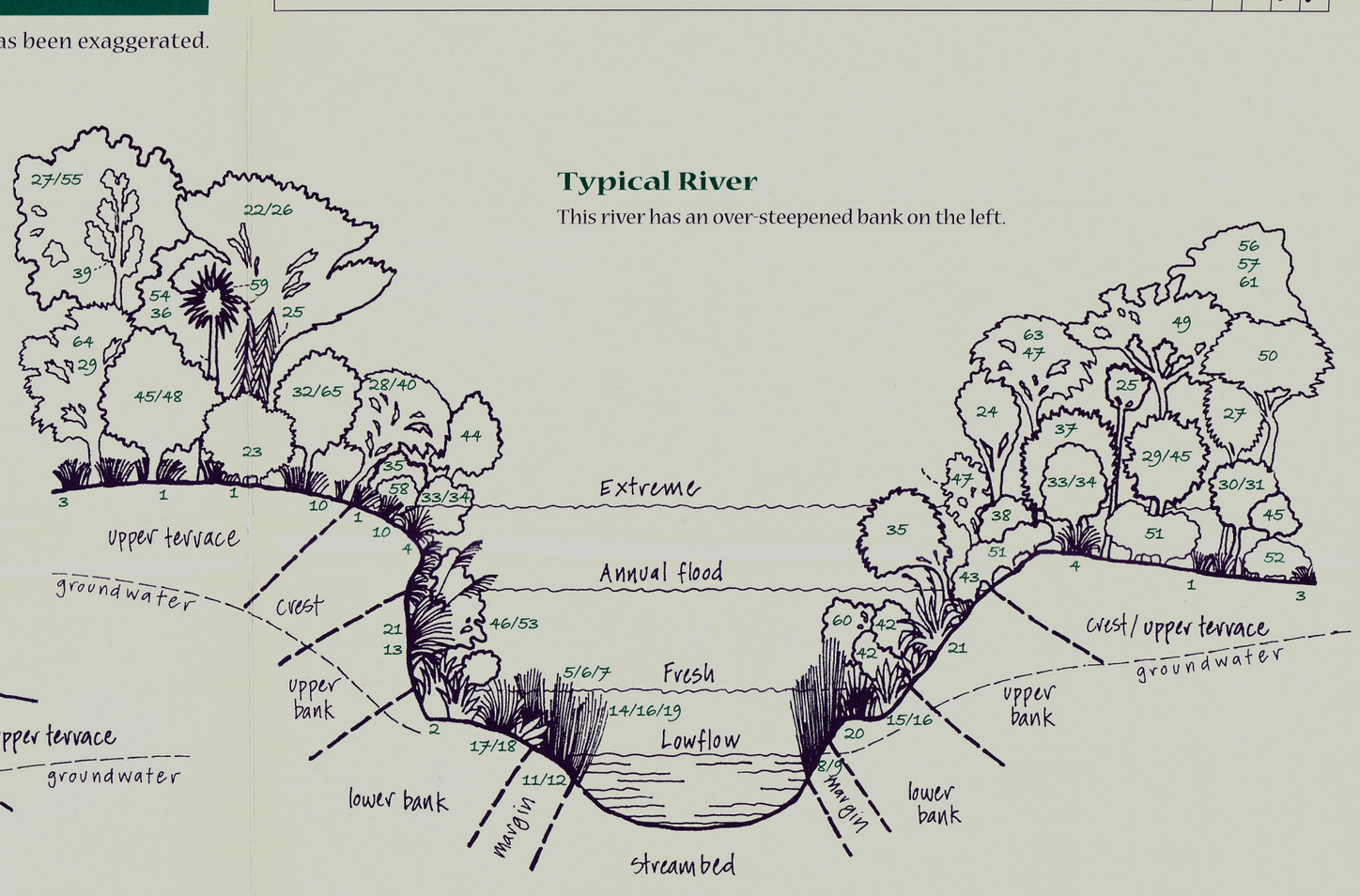
Typical Seasonal Stream

This profile shows upper stream reaches with seasonal water flows in winter or after heavy rain (called a 'fresh').



Typical Stream

This stream profile shows a gentle bank on left and moderately steep bank on right, with spring-fed low flows.



Typical River

This river has an over-steepened bank on the left.

Shrubs and Trees

			Plant Tolerances					Planting Zones			
			Sun	Shade	Wet	Dry	Wind	Margin/stream edge	Lower bank	Upper bank	Crest/upper terrace
22	akeake	*Dodonaea viscosa (protect from frost)*	■	□	□	■	■				✓
23	akiraho, golden akeake	*Olearia paniculata*	■	□	□	■	■			✓	✓
24	hinau	*Elaeocarpus dentatus*	◪	◪	◪	◪	□				✓
25	horoeka, lancewood	*Pseudopanax crassifolius*	■	■	◪	■	■			✓	✓
26	houhere, narrow leaved lacebark	*Hoheria angustifolia*	■	□	◪	■	■				✓
27	kahikatea, white pine	*Dacrycarpus dacrydioides*	◪	◪	■	□	◪				✓
28	kaikomako	*Pennantia corymbosa*	■	■	■	■	□			✓	✓
29	kanuka	*Kunzea ericoides*	■	□	□	■	■			✓	✓
30	karamu	*Coprosma robusta*	■	◪	◪	■	■			✓	✓
31	kohuhu	*Pittosporum tenuifolium*	■	◪	□	■	■			✓	✓
32	korokio	*Corokia cotoneaster*	■	□	□	■	□			✓	✓
33	koromiko	*Hebe stricta var. atkinsonii*	■	◪	◪	◪	◪			✓	
34	koromiko	*Hebe gracillima*	■	◪	◪	◪	□			✓	✓
35	kotukutuku, tree fuchsia	*Fuchsia excorticata (protect from frost)*	◪	■	◪	□	□			✓	✓
36	kowhai	*Sophora microphylla*	■	◪	□	■	■			✓	✓
37	tarata, lemonwood	*Pittosporum eugenioides*	■	◪	◪	■	□			✓	✓
38	mahoe	*Melicytus ramiflorus (protect from frost)*	◪	■	◪	◪	□			✓	✓
39	manatu, lowland ribbonwood	*Plagianthus regius*	■	□	◪	■	■			✓	✓
40	manuka	*Leptospermum scoparium*	■	□	■	■	■			✓	✓
41	matai	*Prumnopitys taxifolia*	■	◪	◪	■	■			✓	✓
42	mingimingi	*Coprosma propinqua*	■	□	■	■	■		✓	✓	
43	narrow-leaved koromiko	*Hebe stenophylla var. stenophylla*	■	□	□	■	■			✓	✓
44	native broom	*Carmichaelia australis var. "flagelliformis"*	■	◪	◪	■	□		✓	✓	
45	papauma, broadleaf	*Griselinia littoralis*	■	■	□	■	■			✓	✓
46	poataniwha	*Melicope simplex*	■	□	□	■	■			✓	✓
47	pokaka	*Elaeocarpus hookerianus*	◪	◪	■	□	□				✓
48	puka	*Griselinia lucida*	■	◪	□	■	■			✓	✓
49	putaputaweta	*Carpodetus serratus*	■	◪	■	□	□			✓	✓
50	rohutu	*Lophomyrtus obcordata*	■	■	◪	■	■			✓	✓
51	round-leaved mikimiki	*Coprosma rotundifolia*	◪	■	◪	□	□			✓	✓
52	shining karamu	*Coprosma lucida*	■	■	◪	■	■			✓	✓
53	shrub koromiko	*Hebe divaricata*	■	□	□	■	□			✓	
54	southern rata	*Metrosideros umbellata*	■	◪	□	■	□			✓	✓
55	tanekaha	*Phyllocladus trichomanoides*	■	◪	□	◪	□			✓	✓
56	tawhai, silver beech	*Nothofagus menziesii*	◪	◪	■	■	□				✓
57	tawhairauriki, black beech	*Nothofagus solandri var. solandri*	■	◪	□	■	□			✓	✓
58	thick-leaved mikimiki	*Coprosma crassifolia*	■	◪	□	■	■			✓	✓
59	ti kouka, cabbage tree	*Cordyline australis*	■	□	■	■	■			✓	✓
60	tier mikimiki	*Coprosma aff. parviflora (sp.t)*	■	◪	■	■	■		✓	✓	
61	totara	*Podocarpus totara (don't plant on hillsides)*	■	◪	□	■	◪				✓
62	tree daisy	*Olearia avicenniifolia*	■	□	□	■	□			✓	
63	tree tutu	*Coriaria arborea*	■	□	◪	■	□		✓	✓	✓
64	turepo, milk tree	*Streblus heterophyllus*	◪	◪	◪	■	□			✓	✓
65	whauwhaupaku, five finger	*Pseudopanax arboreus*	◪	◪	◪	◪	□				✓
66	yellow wood	*Coprosma linariifolia*	◪	■	◪	◪	□			✓	✓