

Getting riparian planting right in the Wellington Region

Your step-by-step guide for successful riparian planting



Protecting our valuable water resource is important for dairying in New Zealand. It also benefits the community who use water for drinking and economic, recreational, aesthetic, ecological and cultural activities.

Riparian zones can be used to maintain and improve water quality. Once fenced and planted, they filter nutrients, sediment and bacteria that leave the land as runoff. Healthy riparian zones will improve the health of your waterway and enhance biodiversity.

This practical 'how to' guide for riparian management covers planting and maintaining riparian zones for a sustainable and profitable dairy farm. It includes advice from industry and regional council experts.

What are riparian zones?

Riparian zones are the strips of land beside drains, streams, rivers and lakes. They include areas on-farm where the soils are wettest, such as wetlands, springs, seeps and gullies.

How to successfully manage your riparian zones

Have a plan to succeed

Having a plan is the key to getting value for your money and doing it right the first time. Your riparian plan should cover the three steps of fencing, planting and maintaining your riparian zones.

Use your farm knowledge to form your plan

1. To avoid losing plants in floods, determine how your waterway behaves in full flow. This will help you decide where to place fences and what to plant.
2. **Identify wet areas** on your farm where runoff or erosion occur most frequently and have the greatest effect on water quality. This includes seeps, springs, gullies, eroding banks, boggy areas and wet soils. These should be part of the fenced area and prioritised for planting.
3. Decide what is manageable. Fencing can be completed reasonably quickly, whereas planting and follow-up maintenance takes longer. Set a realistic timeframe and budget for planting. For example, by planting 25% of the area per year, your riparian zones will be complete in four years.



TIP

Your Greater Wellington Regional Council land management officer can answer questions you have about fencing and riparian zones. Call 0800 496 734 and ask for the land management officer that covers your area. It's the best way to get advice and support.



Set fences back from the regular high flow height. This may be quite different from the low flow height.

First things first – animals out

Livestock trample and graze plants. They also damage banks and defecate in water, adding sediment, nutrients and bacteria which reduce water quality. All waterway fencing needs to be permanent to guarantee stock exclusion.

Map your waterways and create a fencing plan. Work out fence lines and crossing points.

Choosing a fencing setback distance

The aim of the setback is to slow runoff enough to ensure as much bacteria, nutrients and sediment as possible are filtered out before they enter your waterway. A setback distance for a healthy riparian zone should vary on-farm to reflect different soil types, slopes and flow. Take in as many seeps and wet areas as you can.

A wider setback is needed on steeper paddocks, longer paddocks and heavier soils, because these all generate fast flowing runoff. On flat to undulating land, relatively small zones of 3-5 m are still capable of reducing nutrients, sediment and bacteria entering waterways.

When choosing the setback distance of your fence, keep in mind what you want to achieve by planting the zones. If you want to create shade for your stream to reduce weed growth and keep streams cool, you may need wider zones to allow more space for the trees. If you want to filter nutrients, sediment and bacteria from runoff, then smaller zones (3-5 m) with shrubs and grasses will still be effective.



TIP

Many culverts will require consent. Contact Greater Wellington Regional Council on 0800 496 734 before you start work. Information on fish-friendly culverts and rock ramps for small streams is available at www.gw.govt.nz/biodiversity.

What to plant and where

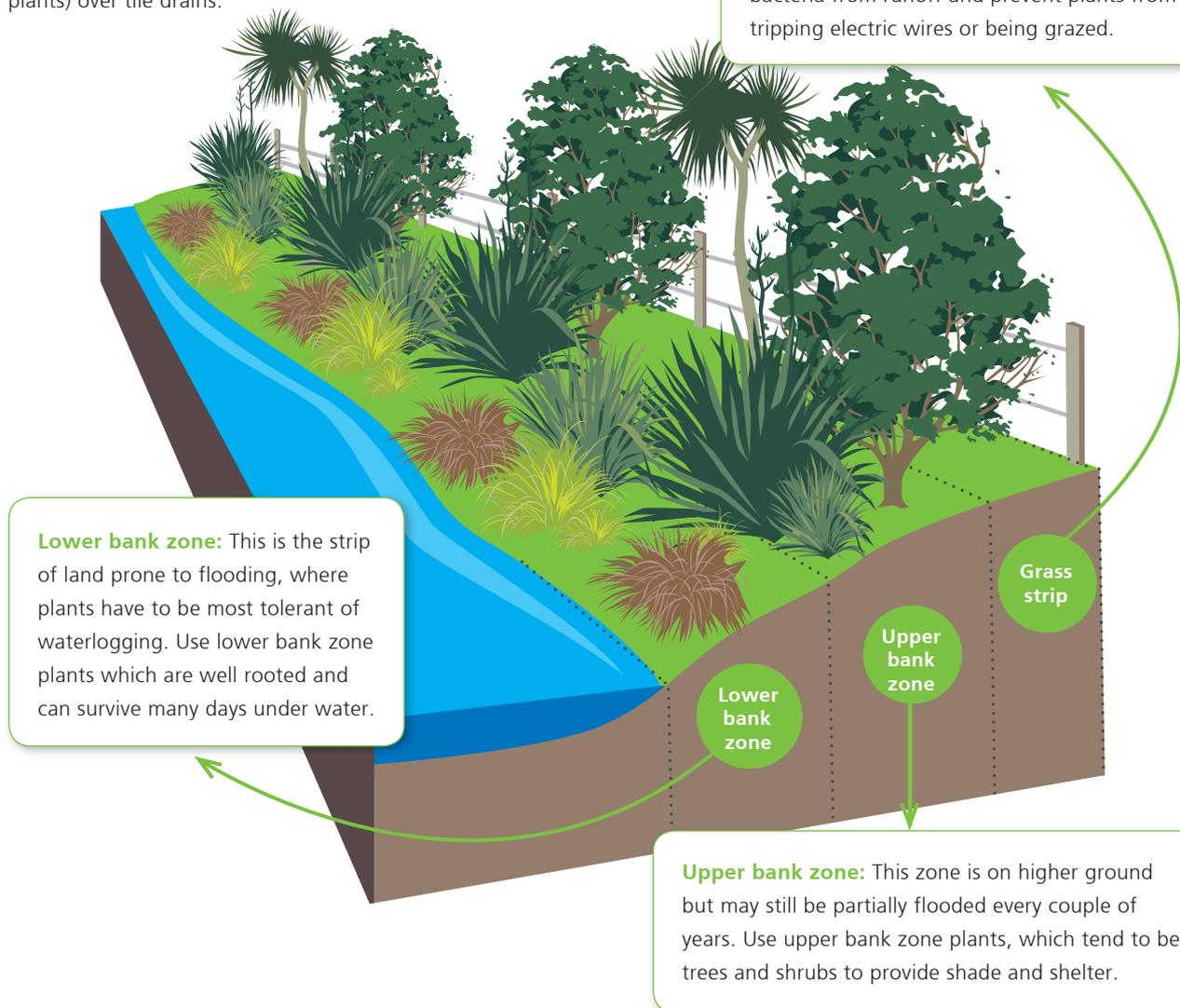
The next step is to decide what to plant, where and at what spacing.

There can be up to three zones of plant types on a healthy riparian zone, as illustrated in the picture below. Planting your upper and lower banks will improve your water quality more than using grass strips alone.

Use the Table of Riparian Plants in this guide to find out which plants are recommended for each zone in the Wellington region and the correct plant spacings to ensure plants outcompete weeds.

Drains: Maintaining access to drains is important so only plant taller species on one side, preferably the north bank to provide the stream with shade in summer. Avoid planting deep-rooted species (upper bank plants) over tile drains.

Grass strip: A one-metre wide grass strip should be left around all fences. This will help to filter out sediment, phosphorus and faecal bacteria from runoff and prevent plants from tripping electric wires or being grazed.



Steps for effective planting technique



1 Remove any grass or weeds.

- Four to six weeks before planting, spot spray 1 m diameter circles around planting locations with a glyphosate-based herbicide. Check product information for correct application. If unlikely to repeat spray within 12 months, consider using a residual compound which will continue to suppress weeds.



2 Put the plant in a hole that is big enough to accommodate plant roots without them being curled up or bent at the bottom or sides of the hole.

- On drier soils, ensure the base of the stem is 1-2 cm below the soil surface. Mulch around plants will help keep soils damp, reduce weeds and provide nutrients. Good mulches include straw, staked down cardboard or wool.
- On permanently wet soils, place the base of the stem (just above where the roots start) about 2 cm above the soil surface with soil mounded up to the root ball.



3 Put a stake beside your plants so you can find them easily when you are weeding and can see if they have died or need replacing (don't attach the plant to the stake).

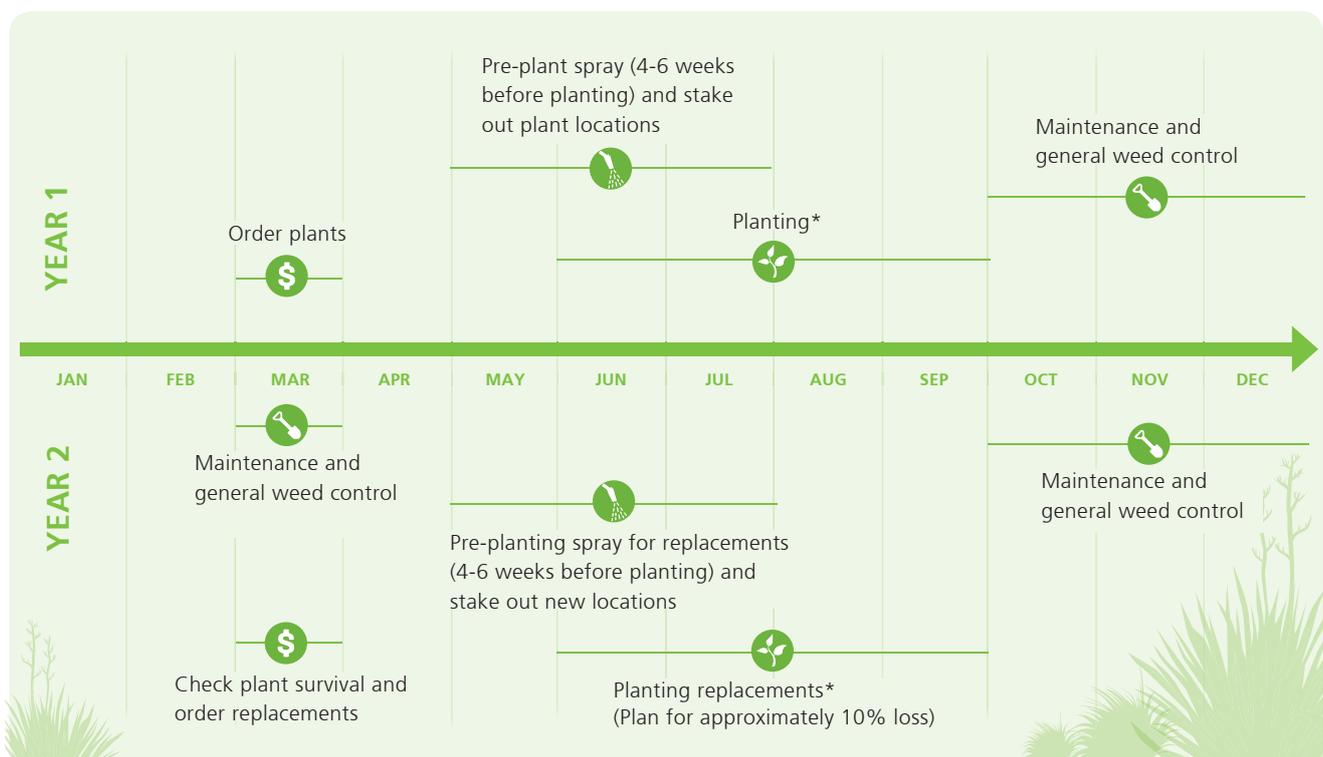


TIP

Plant guards help to protect your plants from herbicide spray, rabbits and hares.



Riparian planting calendar – two year plan



*If water levels are high delay planting the lower bank zone until spring.

Holding the line: maintenance

Keeping on top of weeds and pests is crucial in the first five years for a healthy riparian zone to become established.

Combining protective and active maintenance methods is recommended as the most effective maintenance option.



Protective maintenance – this is less labour intensive but comes at a greater initial cost. Surround each plant with at least a 30-40 cm diameter of biodegradable mat that suppresses weed growth. You can use mulch, biodegradable weed mat (not plastic) or old woollen carpet. Wood chip or sawdust from the calf shed can be used as mulch as it has added nutrients from the manure. Avoid using fresh wood chip around the plant as it may remove nitrogen from the soil causing new plants to yellow off and possibly die.



Active maintenance – this can be labour intensive but has a lower initial cost. Each plant should be staked for easy location and brush cut, hand weeded or carefully sprayed around with a glyphosate-based herbicide, twice a year. If you choose to spray, follow product guidelines; desired plants are usually highly sensitive to herbicides so caution must be taken to protect against spray drift or accidental spray.



TIP

Grass strips do a great job at filtering runoff. Avoid the temptation to let livestock graze your margins, even if it is just rank grass. If you need to, brush cut your grass filter strips – don't spray them.



TIP

Pests such as rabbits, hares, possums and deer may eat your plants. For information on animal pest control contact your Greater Wellington Regional Council biosecurity officer (0800 496 734) or visit www.gw.govt.nz/pest-animals.

Common weeds to remove in the Wellington Region



To find out how to manage weeds visit the Greater Wellington Regional Council website www.gw.govt.nz/pest-plants.

FAST 5 PLANTS FOR THE WELLINGTON REGION



Cabbage tree



Pukio



Spring-flowering toetoe



Karamū



Mānuka

These five go-to plants are ideal to start your planting with – they are hardy, fast-growing, can be planted straight into pasture and don't require shelter. Ask your nursery for eco-sourced plants as they are grown from local wild seed and are best adapted to your climate.

Table of Riparian Plants

Tolerates key: Full sun Wind Salt wind Frost hardy Poorly drained soil (boggy) Dry soil conditions

Benefits key: Attracts birds Attracts bees Slope stabilisation Filters runoff Shade Fish habitat

Plant name	Type	Tolerates	Benefits	Size (height x width)
Lower bank zone				
Space 1-1.5 m between plants				
Cabbage tree (tī kōuka) <i>Cordyline australis</i>	Tree			10 x 3 m
Pukio <i>Carex secta</i>	Sedge			0.75 x 1 m
Spring-flowering toetoe (toetoe) <i>Austroderia fulvida</i>	Grass			1.5 x 1.5 m
Giant umbrella sedge (upokotangata) <i>Cyperus ustulatus</i>	Sedge			1 x 1 m
Swamp sedge (pūrei) <i>Carex virgata</i>	Sedge			0.75 x 1 m
Upper bank zone				
Space 1.5-2 m between plants				
Karamū <i>Coprosma robusta</i>	Shrub/small tree			4 x 1.5 m
Mānuka <i>Leptospermum scoparium</i>	Small tree			4x1.5m
Akiraho <i>Olearia paniculata</i>	Shrub/small tree			1x1.6 m
Black matipo (kōhūhū) <i>Pittosporum tenuifolium</i>	Small tree/tree			8 x 3 m
Kahikatea* <i>Dacrydium dacrydioides</i>	Tree			40-60 x 4 m
Kānuka <i>Kunzea ericoides</i>	Tree			8 x 3 m
Koromiko <i>Hebe stricta</i>	Shrub			1.8 x 1 m
Lemonwood (tarata) <i>Pittosporum eugenoides</i>	Tree			9 x 4 m
Lowland ribbonwood (manatu) <i>Plagianthus regius</i>	Tree			3 x 15 m
Mingimingi <i>Coprosma propinqua</i>	Shrub			4 x 1.5 m
Swamp flax (harakeke) <i>Phormium tenax</i>	Other			2 x 2 m
Tōtara* <i>Podocarpus totara</i>	Tree			20 x 4 m
Wineberry (makomako) <i>Aristotelia serrata</i>	Shrub/tree			8 x 3 m

*Plant these species into existing vegetation or two to three years after initial plantings so they have shelter to grow.

Successful riparian planting in the Wellington Region



Kate and Steve Pitney milk 235 cows near Carterton on 385 hectares which includes a drystock operation. They started to fence their waterways for better stock and land management soon after buying the farm in 2002. They have planted more than 6000 trees along three kilometres of stream.

Kate and Steve began by retiring a steep slope bordering a drain which was often saturated and caused stock to slip. In 2006 their local land management officer developed a planting plan for them and organised the local primary school to help with planting as part of the council's Water and Schools programme.

They were introduced to the Enaki Stream Care Group where they learnt which plants were best suited to their soils and climate.

Kate says the key to success is realising you're not on your own. "The knowledge and help is out there, you just need to know who to ask."

Kate and Steve know that follow-up spraying is important in the first three to five years and replacing any losses helps to keep weeds down, making the job easier long-term. Maintenance often needs to be done at the busiest time of the year during calving, so consider using contractors if you haven't got the time.



TOP TIPS Kate and Steve Pitney

"You can plant your drains without losing access"

We plant up the north bank of drains and leave the south side in rank grass. The plants provide shade for the stream in summer and the rank grass provides a filter for runoff while still allowing access when needed.

"Think long term when planning"

We begin by planning where we position fences so we don't have to move them later for planting; this is usually well back from the high water line. Our plans extend through to how we will maintain our plantings over the next three to five years to ensure they are successful.

"Watch out for sub-surface drains"

Roots can crack and block sub-surface drains. Mark out your tile and mole drains on your planting plans and choose shallow-rooted lower bank zone plants near or over them. Using unperforated drainage pipes near waterways will stop roots getting in.

A valuable asset for your farm

When fenced and planted, riparian zones are a valuable asset for your dairy farm. They function like a sieve, helping to filter out sediment and nutrients that leave farmland in runoff before they enter waterways and provide valuable habitats for animals, birds, insects and fish.

How do healthy riparian zones improve water quality?

- Riparian zones help to reduce sediment into waterways, improving water clarity and the habitat for insects and fish. Less sediment means less cost for drain clearing and less risk of flooding.
- Riparian zones reduce nutrients into waterways, decreasing weed growth, improving biodiversity and water quality, and providing a better environment for swimming and fishing for you and your community.
- On your farm, well managed riparian zones will improve stock management and protect them from getting stuck or drowning in waterways. Taller trees will provide shelter from wind, increase shade and reduce heat and wind stress.

Find out more about the benefits of planting riparian zones in *Mind the stream: A guide to looking after urban and rural streams in the Wellington Region*. Contact Greater Wellington Regional Council (0800 496 734) for a copy.

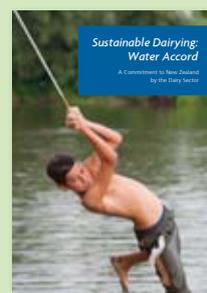
The *Sustainable Dairying: Water Accord* (Water Accord) was developed in 2013 by the dairy industry and is a commitment to manage the land in a way that contributes to achieving water quality desired by New Zealanders. Good riparian management is a requirement of the Water Accord.

The Water Accord requires dairy farmers to ensure:

- Stock exclusion from 90% of farm waterways* and drains** greater than 1 m in width and deeper than 30 cm and significant wetlands by 31 May 2014 and 100% by 31 May 2017.
- 50% of dairy farms with waterways* have a riparian planting plan by 31 May 2016 and all by 31 May 2020.
- Of these farms half of their riparian plan commitments have been met by 31 May 2020, with full implementation by 2030.

*A water accord waterway is a "lake, spring, river or stream (including streams that have been artificially straightened but excluding drains) that permanently contains water and any significant wetland. This does not include temporary watercourses that flow during or immediately following extreme weather events".

**A water accord drain is an artificially created channel designed to lower the water table and/or reduce surface flood risk and which has permanently flowing water but does not include any modified (e.g. straightened) natural watercourse.



The Regional Freshwater Plan for the Wellington Region has rules about what can and cannot be done near or to waterways. The Plan is under review with new rules to be proposed in 2015. Activities you may need consent for around riparian zones include:

- Construction of bridges, culverts, fords, tracks and raceways.
- Any activity disturbing the bed of a river, lake or wetland, including the removal or deposition of sediment.
- Clearing vegetation in, on or under the bed of a river or lake. This includes removing vegetation, rocks, gravel, sediment or other obstructions from a waterway.
- Drainage of a wetland or the creation or deepening of drains close to a wetland.
- Introducing or planting pest plants.

To find out if you need consent for any of the above, contact Greater Wellington Regional Council at info@gw.govt.nz or 0800 496 734.



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