

Getting riparian planting right in the Horizons 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.

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 or 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 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 local Horizons Freshwater Management Officer can answer questions you have about fencing and riparian margins during a farm visit. They can then develop riparian plans with you, tailored to your farm. Call 0508 800 800 and ask for your local Freshwater Management Officer. It's the best way to find out what funding or support is available.



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.

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

Check with Horizons Regional Council (0508 800 800) to see if you are in a flood control or drainage scheme area. Fencing and planting may need consent with these areas.

What to plant and where

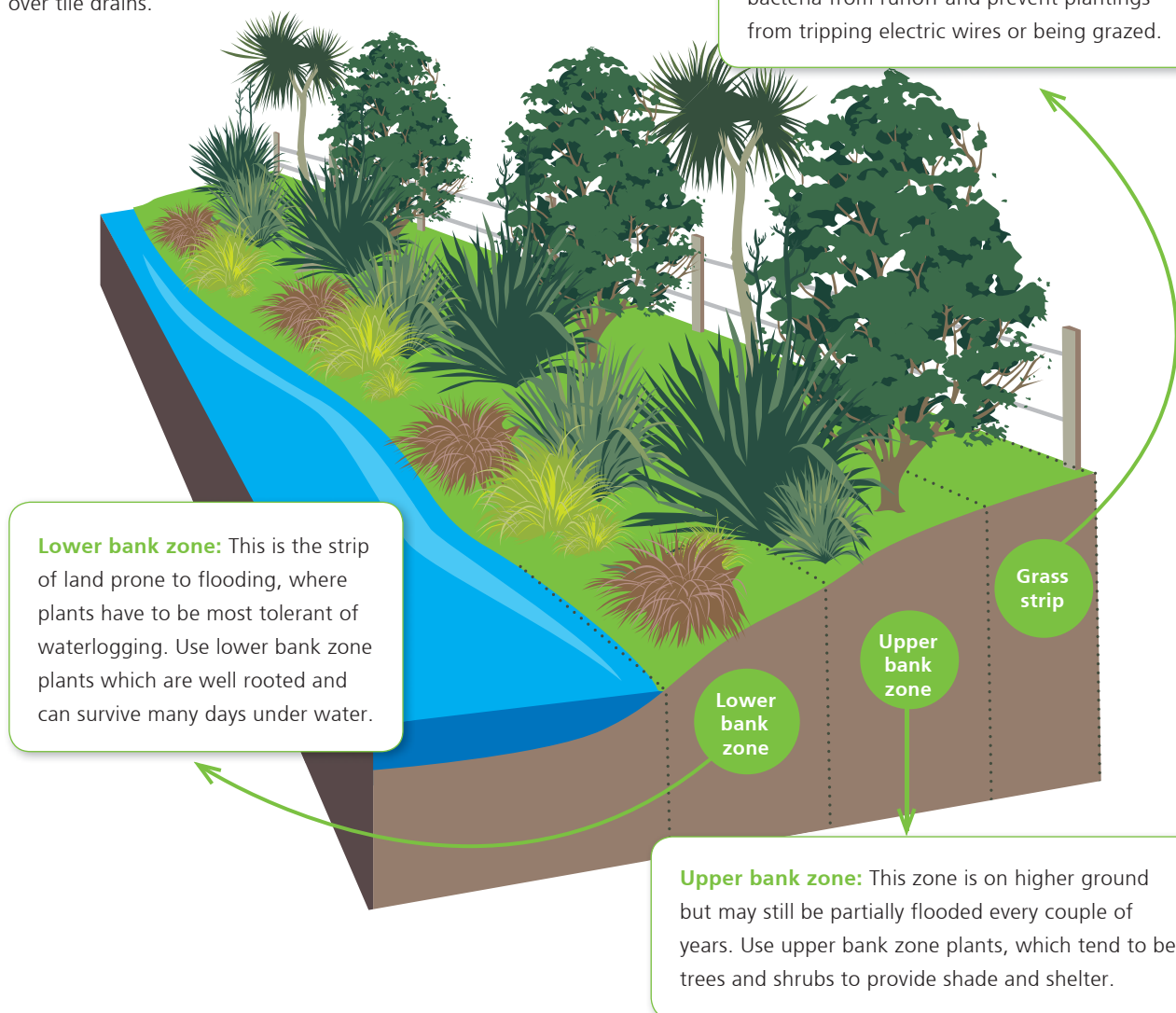
The next step is to decide what to plant, where and at what spacing.

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 Horizons Region and the correct plant spacings to ensure plants outcompete weeds.

Drains: Maintaining access to drains is important so plant up one side only, 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 plantings from tripping electric wires or being grazed.



Steps for effective planting technique



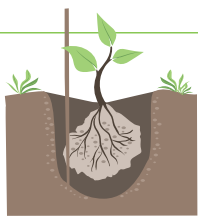
1 Remove any grass or weeds.

- 4-6 weeks before planting, spray 1 m diameter circles with a glyphosate-based herbicide at the location where you will plant each plant. Check product information to ensure the herbicide does not remain active in the soil or have residual effects.



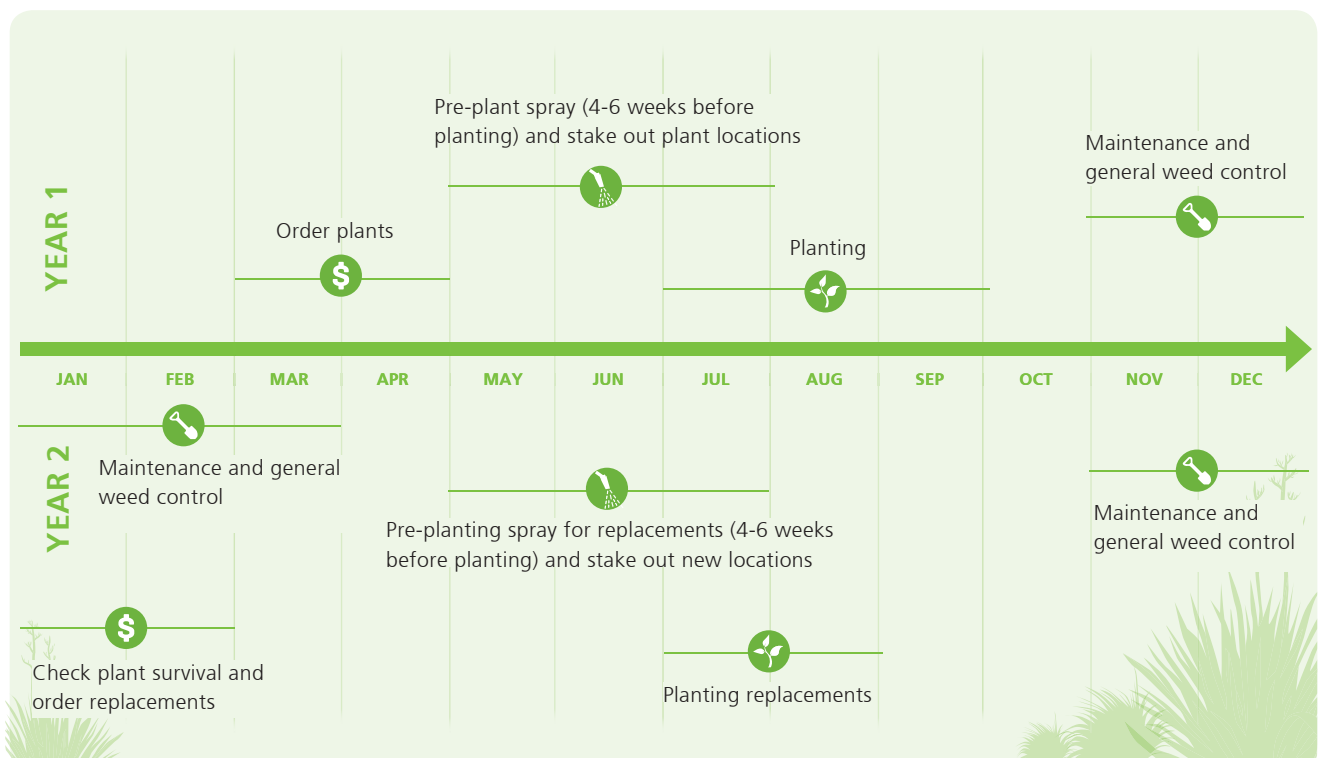
2 Put the plant in a hole that is big enough to accommodate plant roots without them being curled up or bent at the bottom or sides of the hole.

- 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, fine bark chips 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).

Riparian planting calendar – two year plan



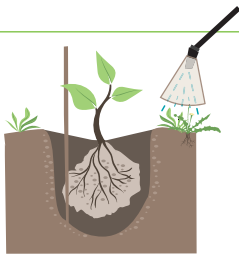
Holding the line: maintenance

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 plain wood chip around the plant as it will strip all the nitrogen out of the soil causing the plant 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 extreme 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 will eat your plants. Contact your Horizons Regional Council animal pest officer for information regarding animal pest control by calling 0508 800 800.

Common weeds to remove in the Horizons region



Blackberry



Convolvulus

Photo courtesy of
Horizons Regional Council



Gorse

Photo courtesy of
Waikato Regional Council



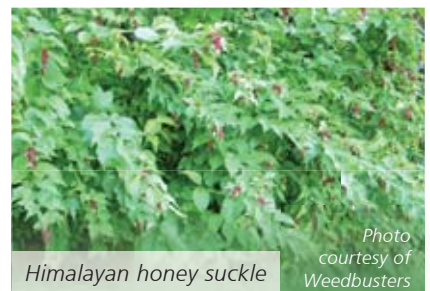
Tradescantia

Photo courtesy of
Horizons Regional Council



Broom

Photo courtesy of
Weedbusters



Himalayan honey suckle

Photo
courtesy of
Weedbusters

For more information on controlling weeds in The Horizons Region contact your local Pest Plant Officer on 0508 800 800.

FAST 5 PLANTS FOR THE HORIZONS REGION



These 5 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 that are hardiest.

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 1-1.5m 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
Summer-flowering toetoe (toetoe) <i>Austroderia toetoe</i>	Grass			1.5 x 1.5 m
Cutty grass (rautahi) <i>Carex geminata</i>	Sedge			0.75 x 1 m
Giant umbrella sedge (upokotangata) <i>Cyperus ustulatus</i>	Sedge			1 x 1 m
Summer-flowering toetoe (toetoe) <i>Cortaderia fulvida</i>	Grass			1.5 x 1.5 m
Swamp sedge (pūrei) <i>Carex virgata</i>	Sedge			0.75 x 1 m
Upper bank zone				
Space 1.5-2m between plants				
Black matipo (kōhūhū) <i>Pittosporum tenuifolium</i>	Small tree/tree			8 x 3 m
Swamp flax (harakeke) <i>Phormium tenax</i>	Other			2 x 2 m
Akeake <i>Dodonaea viscosa</i>	Small tree			6 x 3 m
Kahikatea* <i>Dacrydium dacrydioides</i>	Tree			40-60 x 4 m
Kānuka <i>Kunzea ericoides</i>	Tree			8 x 3 m
Karamū <i>Coprosma robusta</i>	Shrub			4 x 1.5 m
Koromiko <i>Hebe stricta</i>	Shrub			1.8 x 1 m
Lemonwood (tarata) <i>Pittosporum eugenoides</i>	Tree			9 x 4 m
Mahoe* <i>Melicope ramiflora</i>	Tree			10 x 3 m
Mānuka <i>Leptospermum scoparium</i>	Small tree			4 x 1.5 m
Mingimingi <i>Coprosma propinqua</i>	Shrub			4 x 1.5 m
Pigeonwood (Porokaiwhiri)* <i>Hedycarya arborea</i>	Small tree			12 x 3 m
Twiggy tree daisy <i>Olearia virgata</i>	Shrub			4.5 x 4.5 m
Tōtara* <i>Podocarpus totara</i>	Tree			20 x 4 m

*Plant these species into existing vegetation or 2-3 years after initial plantings so they have shelter to grow.

Successful riparian planting in the Horizons Region



Brian and Alison Baxter have a windswept dairy farm near the base of the Ruahines. They milk 320 cows on 130 hectares (effective). The creeks which run through their farm are fed by springs with very high water quality. The Baxters' have been planting for four years and have put in 2500 plants.

What have they done to manage their riparian zones?

Maintaining the pristine quality of the spring water is important to the Baxters' and a motivating factor for fencing and planting. Their creeks are full of watercress, which the cows love, so as Brian says "if the fence wasn't there, the cows would be getting amongst it within minutes".

The Baxters' have planted hardy species to survive blustery conditions. Alison is the designer, laying out where the plants should go; the boys follow after her, digging and planting them. They plant flax, toetoe, cabbage trees and twiggly tree daisy. Flaxes are kept a metre from the high water mark to ensure they won't grow into the channel or fall over in floods.

Brian and Alison chose to not pre-spray before planting because having grass growing up around the plants shelters them from the strong winds. In less windy situations they know that treading down and brush-cutting would ensure plantings have space to grow. The grass growth helps suppress weeds and makes managing their zones less time consuming – but they always keep an eye out for weeds that might need extra effort.



Tui

Photo courtesy of Lee Davies (DairyNZ)



THE BAXTERS TIPS FOR RIPARIAN PLANTING

"Shelter is vital to success in windy areas"

Plantings which are sheltered by pine stands are noticeably bigger than the plantings that are exposed. The bigger plants provide shelter that promotes the growth of smaller plantings and pasture downwind of them.

"Get advice when you need it"

We got good advice from Horizons Regional Council to map the zones and plan which plants we would use and where to put them. This helped us plant achievable sections and provided a successful recipe to copy for subsequent planting.

"Be patient, your hard work will be worth it"

We didn't see much evidence of our plantings until the second year when the plants grew bigger than the surrounding grasses and the toetoe and flax put up flowers. A bonus has been the increase in birdlife on our property, including native kereru and tui. It takes time but we are proud of what we have achieved. It's very satisfying when you see the results.

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.

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 protect stock from getting stuck or drowning in waterways, provide more shade, reduce heat-stress and make it easier to manage stock.

Riparian plants stabilise banks with their roots, limiting the loss of your land through erosion.

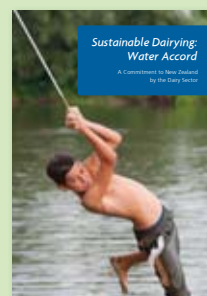
The Sustainable Dairying: Water Accord (Water Accord) was developed in 2013 by the dairy industry and is a commitment to manage the land in a way that contributes to achieving water quality desired by New Zealanders. Good riparian management is a requirement of the Water Accord.

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.



Horizons Regional Council has rules about what can and cannot be done near or to waterways. Activities you may need consent for which relate to riparian zones include:

- Fencing or planting in a flood control or drainage scheme area
- Construction of dams, bridges, culverts, fords, tracks and raceways
- Any activity disturbing the bed of a river or lake 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
- Earthworks, land disturbance and cultivation of land next to a waterway, including all permanently flowing and all intermittently flowing waterways with an active bed greater than 1 m.

If in doubt please contact Horizons Regional Council on 0508 800 800 or help@horizons.govt.nz.

