

Getting riparian planting right in Auckland

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 value 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 also 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 four steps of fencing, site preparation, 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. Start weed control, fencing and planting from upstream and work downwards.
4. Decide what is manageable and consider completing your project in stages. Fencing can be completed reasonably quickly, whereas planting and follow-up maintenance takes longer. Set a realistic timeframe and budget for planting.



TIP

An Auckland Council land management advisor can answer questions about fencing, riparian planting and plant and animal pest control during a farm visit. It's free and it's the best way to find out what funding or support is available. Call 09 301 0101 or email rural@aucklandcouncil.govt.nz.



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 practical.

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 stock, create wildlife habitat, reduce weed growth and keep streams cool, you will need wider zones to allow more space for trees, shrubs and grasses. 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

Once fenced, areas are more vulnerable to weed invasion and establishment, so have a plan for managing weeds.

What to plant and where

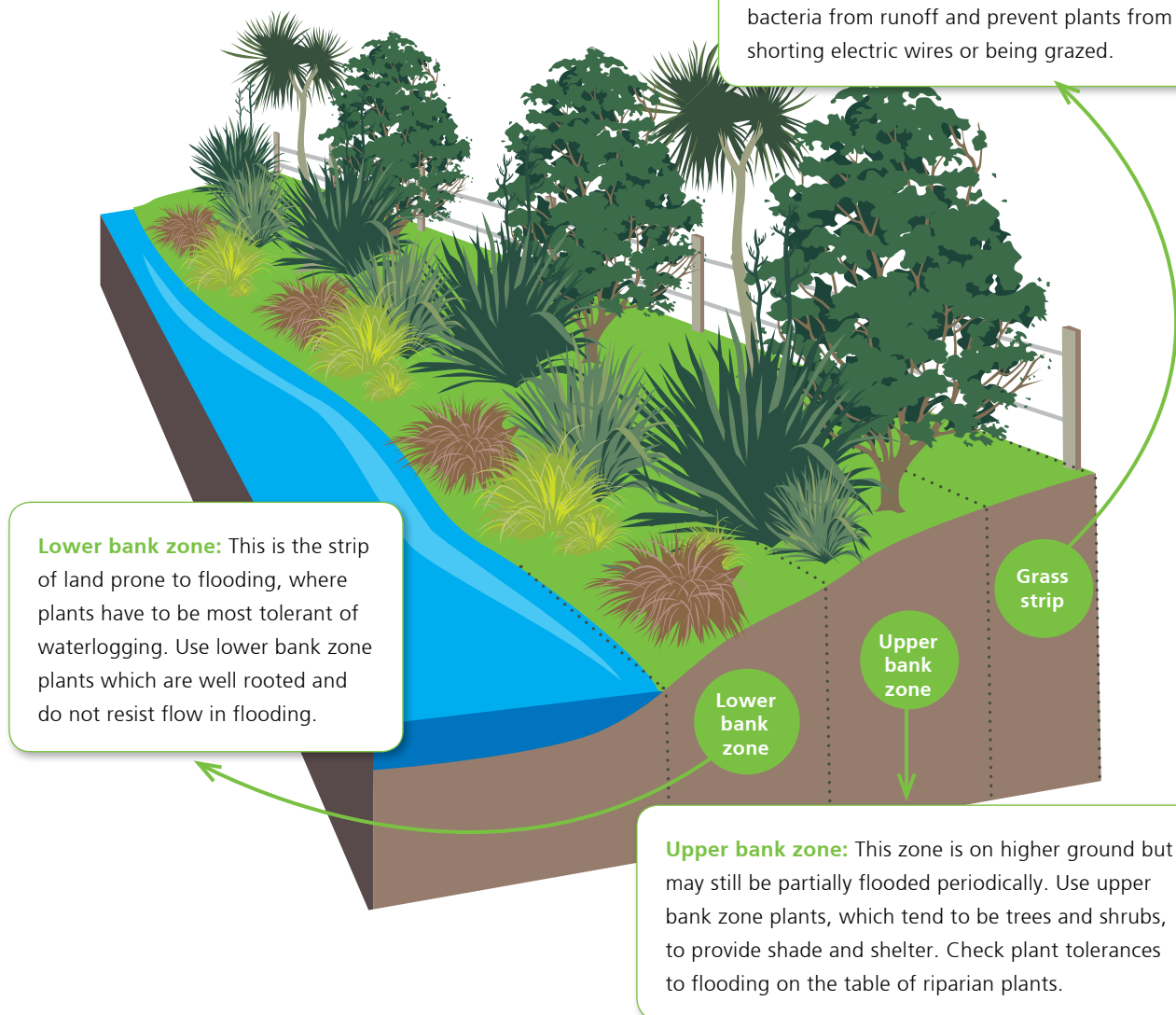
The next step is to decide what to plant, where and at what spacing and the level of weed control required.

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 Auckland region and the correct plant spacings to ensure plants outcompete weeds.

If it is not possible to plant natives on both side of a stream plant the north bank to provide the stream and livestock with shade.

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 shorting electric wires or being grazed.



Steps for effective planting technique



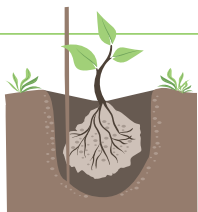
1 Remove any grass or weeds.

- Where kikuyu is dominant pre-spray twice (in summer and autumn) with a glyphosate based herbicide to knock it back hard and form a good mulch. Pre-spray initially in December, five to six months out from planting, and again four to six weeks out from planting.
- Where kikuyu is not dominant, spot spray where each plant will go, four to six weeks out from planting with a glyphosate based herbicide.



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

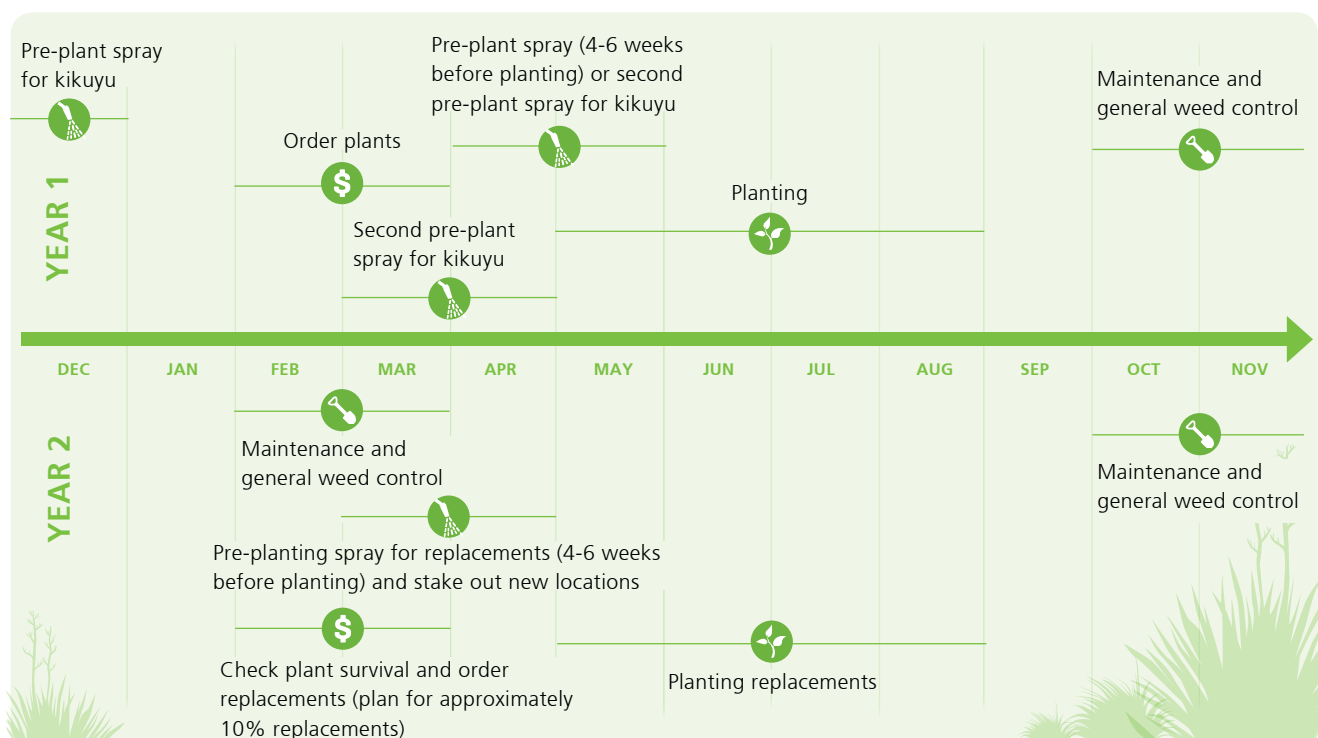
- On drier soils, ensure the base of the stem (just above where the roots start) is 1-2 cm below the soil surface. Mulch around plants will help keep soils damp, reduce weeds and provide nutrients. Good mulches include clean post peelings, staked down cardboard or wool.
- On permanently wet soils, place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

- Kikuyu grows high, fast; using painted stakes will make plants easier to find.

Riparian planting calendar – two year plan



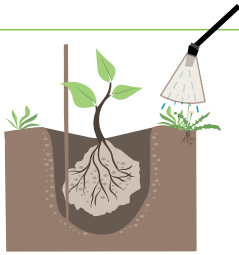
Holding the line: maintenance

Keeping on top of plant and animal 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. It is also not suitable in a flood zone where material may wash away. 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. Old woodchip or sawdust from the calf shed can be used as a mulch but avoid fresh woodchip.



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; your plants will be 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 will eat your plants. Contact an Auckland Council biosecurity advisor for information regarding animal pest control on 09 301 0101.

Common weeds to remove in Auckland



Japanese honeysuckle

Photo courtesy of Weedbusters



Chinese privet

Photo courtesy of Weedbusters



Tradescantia

Photo courtesy of Weedbusters



Moth plant

Photo courtesy of Weedbusters



Pampas

Photo courtesy of Weedbusters



Woolly nightshade

Photo courtesy of Weedbusters

For more information on how to manage plant and animal pests visit aucklandcouncil.govt.nz/biosecurity.

Love for the land and sea propels passion for planting



Protecting New Zealand's largest snapper nursery is a major driver behind Earle and Gaylene Wright's impressive waterway planting.

Their 100 hectare farm at Tapura, north of Auckland, is located close to the Kaipara Harbour and is a flagship farm for the Integrated Kaipara Harbour Management Group. The community group formed in 2005 to work towards the common goal of a healthy and productive Kaipara Harbour.

Having grown up on the farm they now own, Earle is passionate about protecting the land and the wider environment.

"Improving environmental performance is essential," says Earle. "We are showing it's possible to maintain production in a fairly intensive system while focusing on sustainability."

Riparian planting began on the property with Auckland Council producing a plan tailored to their goals around protecting water quality. Waterways were broken up into bite-sized sections to plant each year. Native plants such as the Carex grasses, Kānuka and Karamū were chosen to suit the soils, climate and waterways. Weed control prior to planting was essential to help knock back Kikuyu and ensure plants weren't smothered.

In 2010 Earle and Gaylene joined forces with Tapura Primary School through the Trees for Survival (TfS) programme. Students grew plants from seedlings at school and helped to plant them on-farm. Each year for five years TfS provided about 400 plants which were planted along a stream running through the Wright's farm.

Now the stream is planted, Earle and Gaylene have moved onto planting a swampy area which nearly the whole farm drains into. "While the land is not productive, it's highly valuable as a sediment trap, nutrient filter and as a habitat for native fish," says Earle.

Leading the way with their riparian planting and their role in protecting the Kaipara harbour has helped spread enthusiasm throughout the community and encouraged other dairy farmers to get involved.



TOP TIPS Earle and Gaylene Wright

"Stake plants, especially if weeds grow vigorously."

Staking plants helps with finding them when they are young enough to need weed control. It's also very rewarding in the early years as you can watch your hard work take shape.

"Buy eco-sourced plants."

These are sourced locally and are better adapted to your farm conditions. So they have a greater chance of survival.

"Work with partners – look for help from your council and community."

Collaborating with organisations like Trees for Survival and the Integrated Kaipara Harbour Management Group provided community support and sped up the learning process. Auckland Council also provides great support and can assist throughout the whole riparian journey.

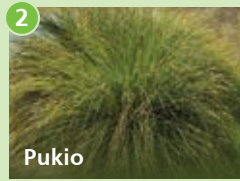
"Create a plan and make it flexible."

Having a plan as a guide is crucial. More importantly, make it flexible to fit your decisions and your farm.

FAST 5 PLANTS FOR AUCKLAND



Cabbage tree



Pukio



Flax



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. Ask your nursery for eco-sourced plants as they are grown from local wild seed and are best adapted to your climate and soils. Refer to Auckland Council's "Ecosourcing" factsheet for more information.

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 0.5-1 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
Cutty grass (rautahi) <i>Carex geminata</i>	Sedge			0.75 x 1 m
Giant umbrella sedge (upokotangata) <i>Cyperus ustulatus</i>	Sedge			1.2 x 2 m
Purex <i>Carex virgata</i>	Sedge			0.5 x 1 m
Upper bank zone				
Space 1.5-2 m between plants**				
Flax (harakeke) <i>Phormium tenax</i>	Other			2 x 2 m
Karamū <i>Coprosma robusta</i>	Shrub/small tree			4 x 1.5 m
Mānuka <i>Leptospermum scoparium</i>	Small tree			4 x 1.5 m
Kahikatea* <i>Dacrydium dacrydioides</i>	Tree			40-60 x 4 m
Kānuka <i>Kunzea ericoides</i>	Tree			18 x 3 m
Karo <i>Pittosporum crassifolium</i>	Small tree			10 x 4 m
Koromiko <i>Hebe stricta</i>	Shrub			1.8 x 1 m
Mahoe <i>Melicactus ramiflorus</i>	Tree			10 x 3 m
Mingimingi <i>Coprosma propinqua</i>	Shrub			4 x 1.5 m
Putaputaweta <i>Carpodetus serratus</i>	Tree			10 x 3 m
Toe Toe <i>Austroderia fulvida</i>	Grass			1.5 x 1.6 m
Tōtara <i>Podocarpus totara</i>	Tree			20 x 4 m

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

**Closer spacing between plants will ensure canopy closure sooner, reducing ongoing weed control.

A valuable asset for your farm

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

How do healthy riparian zones improve water quality?

- Riparian zones help to reduce sediment reaching 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 reaching 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.

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

Protecting wetland areas reduces liverfluke infestation and improves stock health.

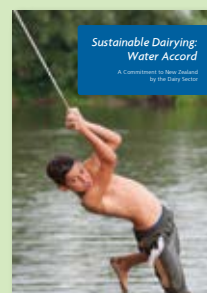
The Sustainable Dairying: Water Accord (Water Accord) was developed in 2013 by the dairy industry and is a commitment to manage the land in a way that contributes to achieving water quality desired by New Zealanders. Good riparian management is a requirement of the Water Accord.

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.



We can help

Auckland Council offers practical advice and funding towards work on your property that will protect water quality and reduce erosion and enhance native biodiversity.

Such advice and funding can include:

- waterway fencing
- alternative water supply
- plant and animal pest control
- creating fish passage
- native planting
- stabilisation of erosion prone land

**To find out more contact your local Land Management Advisor
phone 09 301 0101 email rural@aucklandcouncil.govt.nz.**

