



# Getting riparian planting finished in Taranaki by 2020

## 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, 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 our waterways.

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 regional council and scientific 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.

### *Finish your riparian plan by 2020*

The Taranaki Regional Council (TRC) is committed to working with land owners to ensure all Taranaki streambanks are protected by riparian (streamside) fencing and planting on the Taranaki ring plain and coastal terraces by 2020. Millions of riparian plants need to be planted – so the council is urging land owners to plan ahead now.

To help finish your riparian planting Taranaki Regional Council can provide native plants at cost. TRC contracts nurseries to grow plants a year ahead. Therefore, you too need to secure your plants a year in advance so that you can meet the 2020 deadline. To make use of this scheme contact them on 06 765 7127.



Working with people  
Caring for Taranaki

# 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 unproductive areas on your farm where soils are wet and runoff occurs most frequently. This includes seeps, springs, gullies, eroding banks and boggy areas. 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 before 2020.

## Making a plan

The Council will help you prepare a riparian plan for free. Visit [trc.govt.nz](http://trc.govt.nz) or phone 06 765 7127.



*Set fences back far enough to avoid high flow events. 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.*

Look at areas of proposed fencing on your riparian plan. Work out fence lines and crossing points. Your Taranaki Regional Council Land Management Officer can help you with this. Call 06 765 7127.

## 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 will 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.

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 (3-5m) with shrubs and grasses will still be effective.



## Managing critical source areas

*Critical source areas (CSAs) are small, low-lying parts of farms such as gullies and swales, where runoff accumulates in high concentration. The runoff carries sediment and phosphorus to waterways.*

Use buffer zones with species like Pukio (*Carex secta*) or other sedge species to filter and slow runoff and decrease phosphorus and sediment loss. The faster the water is flowing, the wider the buffer strip needs to be to provide time for effective filtering.



*Buffer zone fencing in a wet or boggy area (critical source area).*

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

### A ZONE - Grass strip:

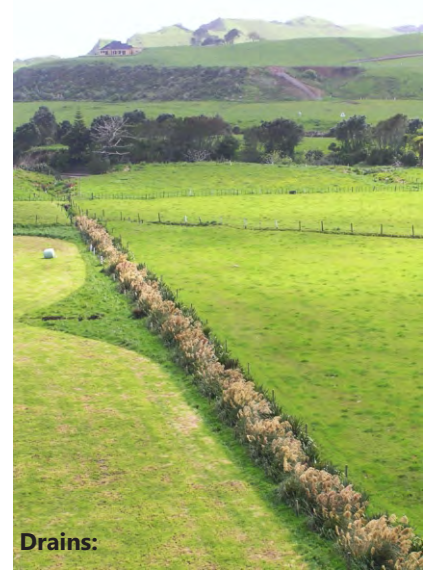
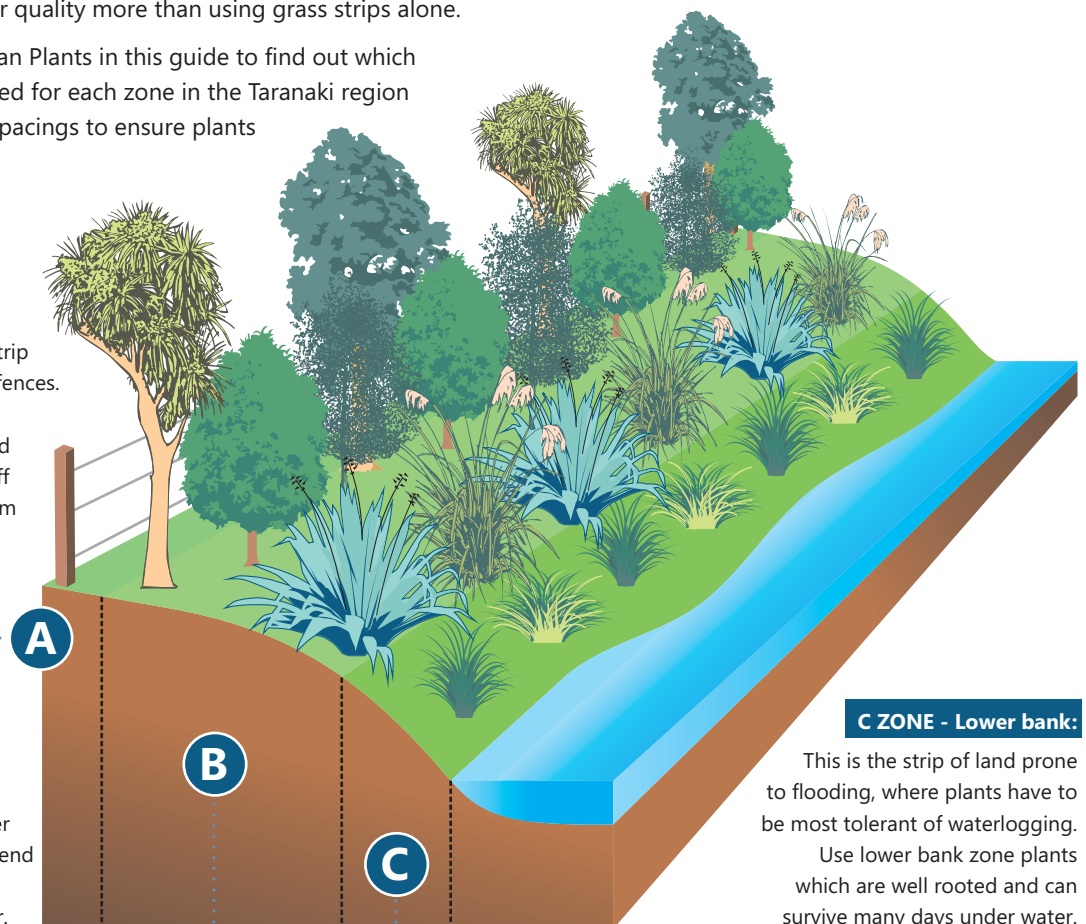
A one metre wide grass strip should be left around all fences. This will help to filter out sediment, phosphorus and faecal bacteria from runoff and prevent plantings from tripping electric wires or being grazed.

### B ZONE - Upper bank:

This zone is on higher ground but may still be partially flooded every couple of years. Use upper bank zone plants, which tend to be trees and shrubs to provide shade and shelter. Plant at 2.5–3m spacings.

### C ZONE - Lower bank:

This is the strip of land prone to flooding, where plants have to be most tolerant of waterlogging. Use lower bank zone plants which are well rooted and can survive many days under water. Plant at 1–1.5m spacings.



**Drains:**

Drains are often the first points where runoff enters a waterway. A riparian buffer will help intercept runoff. 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.

## Steps for effective planting technique



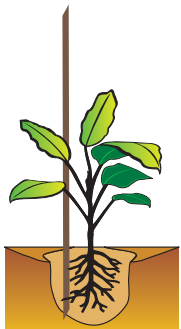
### Remove any grass or weeds.

- Four to six weeks before planting, spray 1m 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.



### 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 1-2cm 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 2cm above the soil surface with soil mounded up to the root ball.

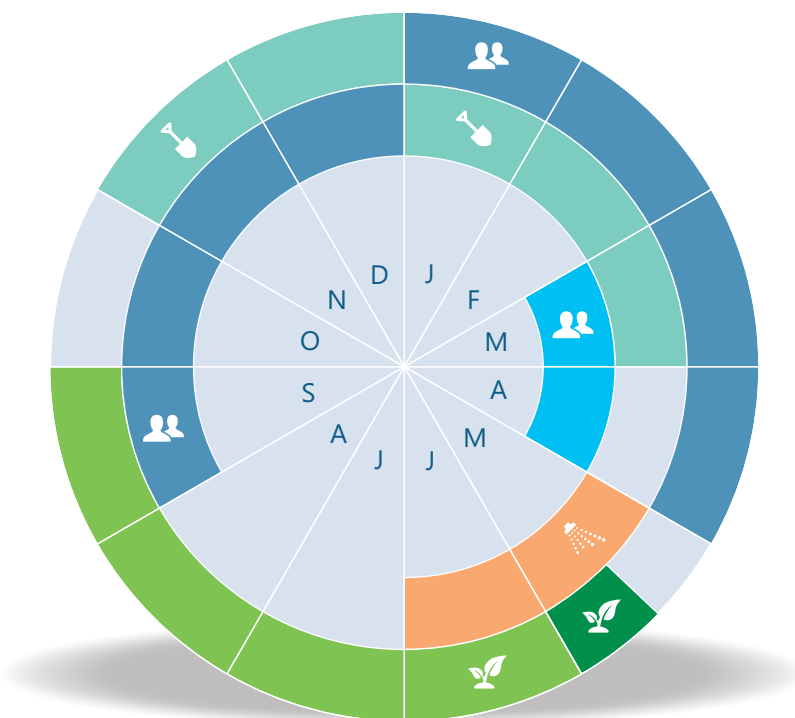


### Optional: apply residual herbicide

A residual herbicide, such as those containing oxidiazon (e.g Oracle), can be used immediately after planting to control broadleaf and grass seedlings as they germinate. When applied to bare soil, this will give effective control for up to three months, reducing the amount of releasing you will need to do. Note that oxidiazon based herbicides require an approved handler's certificate for use.

**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 - year plan (then repeat in year two)



### Arrange visit

Contact a LMO and order plants Ph: 06 765 7127



### Contact contractor

Arrange planting contractor if required



**Maintenance** and general **weed control**



### Pre-spray



### Plant pick-up

Arrange planting pick-up at your nearest TRC plant depot



### Planting

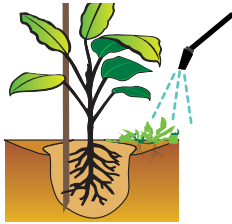
See above for effective planting technique



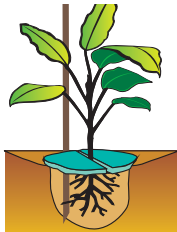
## Holding the line: maintenance

*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.



**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.



**Protective maintenance** – this is less labour intensive but comes at a greater initial cost. Surround each plant with at least a 30-40cm 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.

## Protecting Taranaki's wetlands

*New Zealand has lost 90% of its wetlands, making protecting those that are left more important than ever. Wetlands are wet, swampy areas on-farm. They can be fenced and planted to benefit the environment and farm management.*

### Benefits of fenced wetlands on-farm

- Protect the land from flood damage by holding excess surface water and releasing it slowly over time.
- Retain and filter nutrients and sediment – constructed wetlands can reduce nitrogen loads by 40-70%.
- Reduce the likelihood of stock getting stuck in wet areas.
- Provide a home for native plants and animals.

For more information on protecting, restoring and creating wetlands on-farm, visit [www.trc.govt.nz/environment/freshwater/wetlands/](http://www.trc.govt.nz/environment/freshwater/wetlands/)



Funding may be available for wetland projects through community organisations and the regional council. Contact Taranaki Regional Council for more information on 06 765 7127.



# Getting riparian planting right in Taranaki

Awatuna farmers Phil and Donna Cram are a sunny, go-ahead couple. It shows in the management of their 117-hectare dairy farm, including beautification of their land and easier management of stock.

The pair joined the Taranaki Regional Council's riparian management programme about 10 years ago and have planted and ordered each year, in good times and bad, to meet its 2020 completion target.

The Crams, who milk 270 cows, try to order about 600 plants a year. Having fenced 2280 metres and planted 3285 metres of streambanks, they've done 100% of their fencing and 61% of their planting. That figure would be higher, but they bought some land that needed extra riparian work.

"I think you've got to just keep chipping away at this," says Phil. "Even in the bad times, take a small piece of stream that needs planting out, rather than a huge piece, and keep chipping away."

The benefits to date have included better ease of stock management. "Everything's obviously 100% fenced now, so there's no stock wandering around, being places they shouldn't be, and aesthetically ... it's a lot nicer to look at now, and it's got to be better for the health of the stream," he says.

"Certainly with the winter rains when the erosion comes through – the big floods – the stabilisation of the creek-banks is way better than it used to be. There's not the erosion once it's been planted out and is established." Donna says that by ordering their plants from the Regional Council a year in advance, they've been able to plan ahead and buy species that will attract native birds, and receive the 10% discount on the first 80,000 plants ordered for the season after the current financial year.



Phil & Donna Cram

"... we have a responsibility to the land that we farm – and it is a privilege to farm here."

- Donna Cram

"It's certainly saved us money and in 10 years you've paid for one year's plants," she says. "We're so lucky in Taranaki that we're getting choices, compared to other regional councils that are really forcing things onto farmers. And when you look around the district now and see the planting a few years on, it's just so nice."

"As we get older I think we realise that... we have a responsibility to the land that we farm and it is a privilege to farm here."

Taranaki Regional Council Land Services Manager Don Shearman says, "The key thing is to order your plants in advance so that the Council can secure enough plants, especially during the lead-up to 2020, while the programme is still voluntary."



Andrew & Penny Meuli

"Riparian planting is such a visual asset on a farm and it can make a big impact."

- Andrew Meuli

Riparian planting is a great way to showcase the effort farmers make to improve the environment, says Kapuni dairy farmer Andrew Meuli.

"Riparian planting is such a visual asset on a farm and it can make a big impact," he says.

Planting has reduced the amount of flooding on the farm as the wetlands retain flood water like a sponge and release it slowly.

"It saves pasture by lessening the severity of flooding. An added bonus is that I now have some good spots for duck shooting."

Andrew and his wife Penny are fifth generation on the family's 155ha farm. The Inaha Stream flows through the property, providing 5.3km of stream to fence and maintain.

The couple started planting and fencing the stream in 2009 following a willow removal programme. Keeping up with regular planting and fencing every year has seen them complete 4.4km of fencing and plant 7660 plants. They have another 3500 plants ordered for 2016.

"We mainly choose native plants and select them carefully for their tolerance to coastal conditions," says Andrew.

Planning is an important step in the process. Invasive in-stream willows mean they have to plan for any riparian management two to three years ahead of time to allow for willow poisoning and removal before fencing, spraying and planting begins.

Andrew and Penny plan to focus on the retirement of more marginal land once all compulsory fencing and planting is complete.



## 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 run-off Shade Fish habitat

Plant name	Type	Tolerates	Benefits	Size (h x w)
LOWER BANK ZONE - space 1 to 1.5m between plants				
Pukio / Purei <i>Carex secta</i>	Sedge			0.75 x 1 m
Toetoe <i>Austroderia fulvida</i>	Grass			1.5 x 1.5 m
Swamp flax (harakeke) <i>Phormium tenax</i>	Other monocot			2 x 2 m
UPPER BANK ZONE - space 2.5 to 3m between plants				
Akeake <i>Dodonaea viscosa</i>	Small tree			6 x 3 m
Broadleaf (papauma) <i>Griselinia littoralis</i>	Tree			10 x 3 m
Broad-leaved five finger* <i>Pseudopanax laetus</i>	Small tree			8 x 3 m
Cabbage tree (tī kouka) <i>Cordyline australis</i>	Small tree			10 x 3 m
Five finger* <i>Pseudopanax arboreus</i>	Small tree			8 x 3 m
Kahikatea* <i>Dacrydium dacrydioides</i>	Tree			20 x 4 m
Karamū <i>Coprosma robusta</i>	Shrub/small tree			4 x 1.5 m
Karo <i>Pittosporum crassifolium</i>	Small tree			10 x 4 m
Kōhūhū <i>Pittosporum tenuifolium</i>	Small tree			9 x 2 m
Koromiko <i>Hebe stricta</i>	Shrub			1.8 x 1 m
Kowhai <i>Sophora microphylla</i>	Small tree			7 x 3 m
Lacebark (houhere) <i>Hoheria sexstylosa</i>	Tree			5 x 3 m
Lancewood <i>Pseudopanax crassifolius</i>	Small tree			5.5 x 2 m
Lemonwood (tarata) <i>Pittosporum eugenoides</i>	Small tree			12 x 3 m
Lowland ribbonwood (manatū) <i>Plagianthus regius</i>	Tree			12 x 3 m
Mapou <i>Myrsine australis</i>	Shrub/small tree			5 x 2 m
Marbleleaf (putaputāwētā) <i>Carpodetus serratus</i>	Tree			10 x 3 m
Taupata <i>Coprosma repens</i>	Shrub/small tree			6 x 2 m
Tōtara* <i>Podocarpus totara</i>	Tree			20 x 4 m
Tree fuchsia* (kōtukutuku) <i>Fuchsia excorticata</i>	Tree			10 x 3 m
Wineberry (makomako) <i>Aristotelia serrata</i>	Shrub/ tree			8 x 3 m
Whiteywood (māhoe) <i>Melicope ramiflorus</i>	Small tree			8 x 2 m

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

To order your plants contact a Taranaki Regional Council Land Management Officer on 06 765 7127.

A full selection of plant species available can be found at [trc.govt.nz](http://trc.govt.nz)



## 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 entering 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 Taranaki Regional Council target for riparian plan completion is 2020.*

Contact your Land Management Officer for advice on:

- Waterway fencing
- Native planting
- Weed control
- Wetland protection

Plan now to complete your riparian planting in a staged approach by 2020.

**To find out more, contact your Land Management Officer on 06 765 7127.**

 06 765 7127  
 riparian@trc.govt.nz  
 www.trc.govt.nz  
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