

# Getting riparian planting right in Taranaki

*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 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.

## *Finish your riparian plan by 2020*

The Taranaki Regional Council 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. To make use of this scheme contact them on 06 765 7127.

## 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.



### GET HELP MAKING A PLAN

Taranaki Regional Council will help you prepare a riparian plan for free. Visit [trc.govt.nz/riparian-management](http://trc.govt.nz/riparian-management) or call 06 756 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.

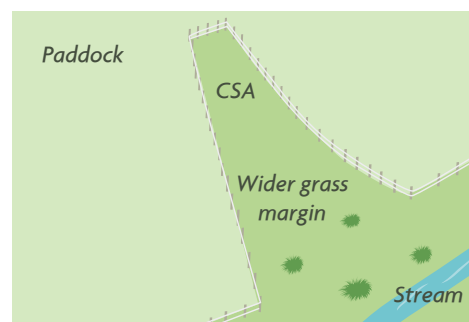
When choosing the setback distance of your fence, keep in mind what you want to achieve by planting the zones. If you want to create shade for your stream to reduce weed growth and keep streams cool, you may need wider zones to allow more space for the trees. If you want to filter nutrients, sediment 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 grass strips to filter and slow runoff and decrease phosphorus and sediment loss.

The faster the water is flowing, the wider the grass 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

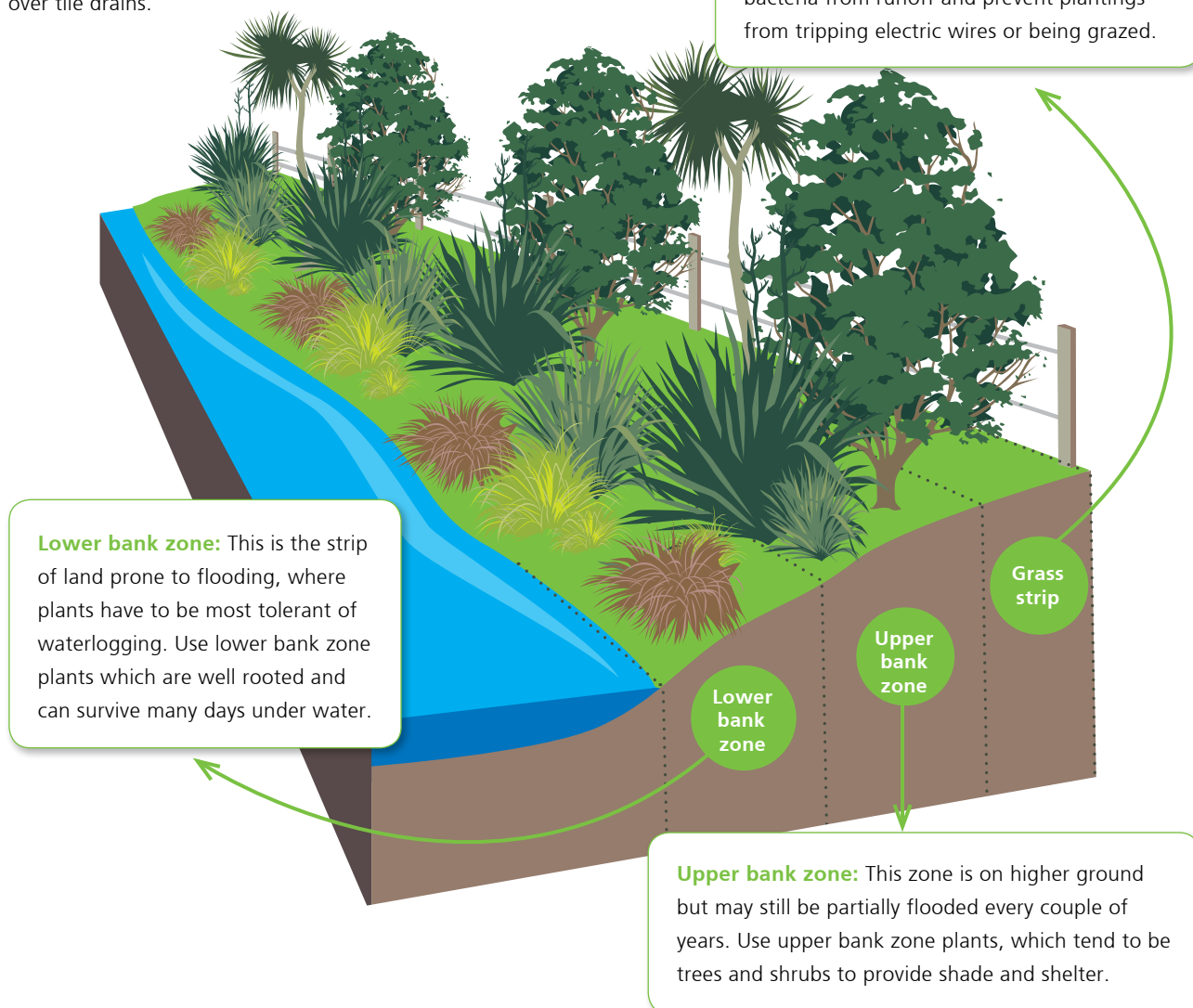
The next step is to decide what to plant, where and at what spacing.

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.

**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.

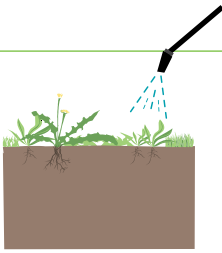
**Grass strip:** A one metre wide grass strip should be left around all fences. This will help to filter out sediment, phosphorus and faecal bacteria from runoff and prevent plantings from tripping electric wires or being grazed.



**Lower bank zone:** 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.

**Upper bank zone:** 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.

## Steps for effective planting technique



### 1 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.



### 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 1-2cm 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.



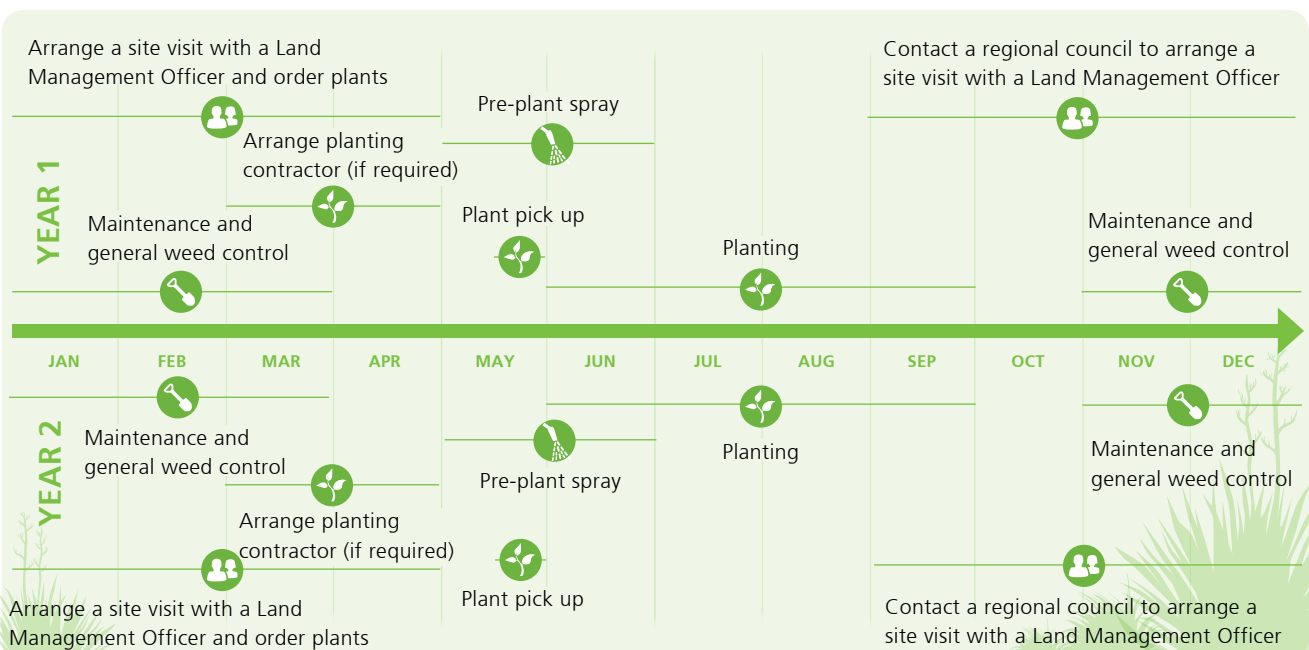
#### Optional: apply residual herbicide

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.



### 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).

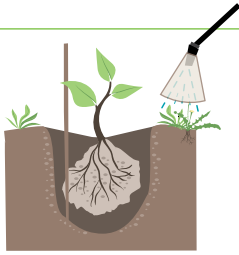
## Riparian planting calendar – two year plan



## 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.



**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.

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## 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 [dairynz.co.nz/wetlands](http://dairynz.co.nz/wetlands).



### TIP

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



*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.



### TOP TIPS Andrew and Penny Meuli

#### *“Stick to your plan.”*

Keep on top of your planting. Stick to your plan and view it as a fixed cost. It’s more manageable to plant small areas regularly.

#### *“Match the fence to the riparian zone.”*

Take into account the features of the area you are fencing and planting to ensure you do not have to repeat the job. For example, if an area is particularly prone to flooding or eroding, create a wider margin and use plant species that will tolerate being submerged.

#### *“Use the expertise and experience available to you.”*

The council employs land management officers who can help plan riparian planting and provide advice on schemes available. Using contract planters is also an effective way to get the job done.

## 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)
<b>Lower bank zone</b>				
<b>Space 1-1.5m between plants</b>				
Pukio <i>Carex secta</i>	Sedge			0.75 x 1 m
Toetoe <i>Austroderia fulvida</i>	Grass			1.5 x 1.5 m
<b>Upper bank zone</b>				
<b>Space 1.5-2m between plants</b>				
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
Köhühū <i>Pittosporum tenuifolium</i>	Small tree			9 x 2 m
Koromiko <i>Hebe stricta var. stricta</i>	Grass			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 eugenioides</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 (putaputawētā) <i>Carpodetus serratus</i>	Small tree			10 x 3 m
Swamp flax (harakeke) <i>Phormium tenax</i>	Other monocot			2 x 2 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>Meliclytus 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.

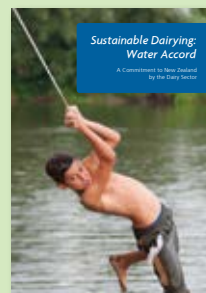
*The Sustainable Dairying: Water Accord* (Water Accord) was developed in 2013 by the dairy industry and is a commitment to manage the land in a way that contributes to achieving water quality desired by New Zealanders. Good riparian management is a requirement of the Water Accord.

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 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.**

