

# Getting riparian planting right on the West Coast

*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, 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, swales, gullies, eroding banks, boggy areas and wet soils. These should be part of the fenced area and prioritised for planting. Bank reconstruction might be needed before 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 native plant nursery is a great source of information for selecting plant species, planting techniques and tips. The DairyNZ land management team can also help with riparian advice. Call 0800 4 DairyNZ (0800 4 324 7969).



*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

You may require consent for certain types of fencing or planting. Check with a West Coast Regional Council river engineer (0508 800 118) to see if you are within a drainage rating district or river control rating district before you start any work.

## What to plant and where

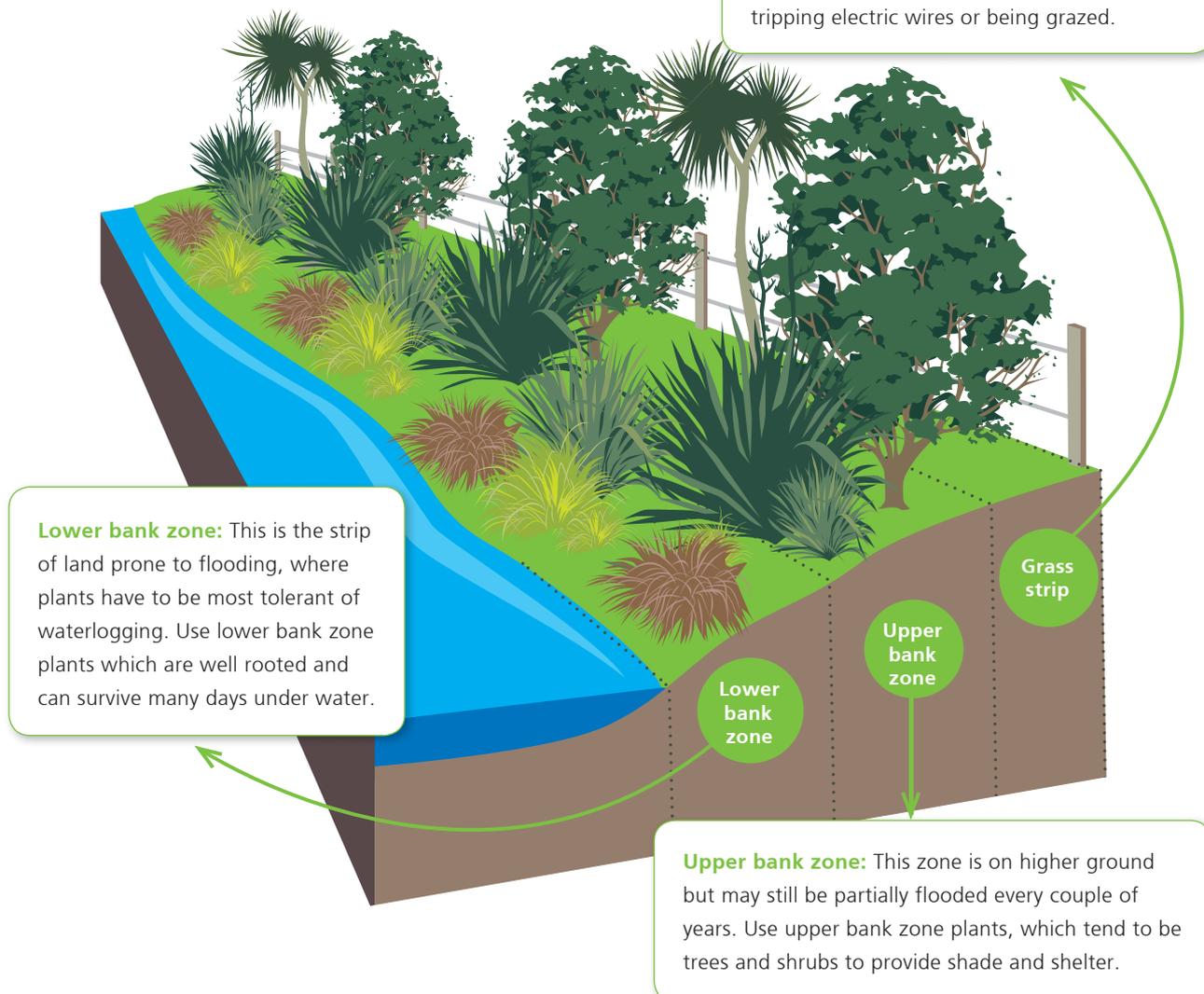
*The next step is to decide what to plant, where and at what spacing.*

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 West Coast 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.

**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.





## Effective plant 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. 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 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, pigs and deer may damage your plants. Contact your West Coast Regional Council biosecurity officer for information regarding animal pest control by calling 0508 800 118 or (03) 768 0466.

## Common weeds to remove on the West Coast



Find out how to manage weeds at [weedbusters.co.nz](http://weedbusters.co.nz).

## FAST 5 PLANTS FOR THE WEST COAST



1 Cabbage tree



2 Carex secta



3 Toetoe



4 Mingimingi



5 Swamp flax

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) |
|--|------------------|-----------|----------|-----------------------|
| <b>Lower bank zone</b>                                   |                  |           |          |                       |
| <b>Space 1-1.5 m between plants</b>                      |                  |           |          |                       |
| Cabbage tree (tī kōuka)<br><i>Cordyline australis</i>    | Tree             |           |          | 10 x 3 m              |
| Purei<br><i>Carex secta</i>                              | Sedge            |           |          | 0.75 x 1 m            |
| Toetoe<br><i>Austroderia richardii</i>                   | Grass            |           |          | 1.5 x 1.5 m           |
| Giant umbrella sedge<br><i>Cyperus usulatus</i>          | Sedge            |           |          | 2 x 1.5 m             |
| Swamp sedge (pūrei)<br><i>Carex virgata</i>              | Sedge            |           |          | 0.75 x 1 m            |
| <b>Upper bank zone</b>                                   |                  |           |          |                       |
| <b>Space 1.5-2 m between plants</b>                      |                  |           |          |                       |
| Mingimingi<br><i>Coprosma propinqua</i>                  | Shrub            |           |          | 4 x 1.5 m             |
| Swamp flax (harakeke)<br><i>Phormium tenax</i>           | Other            |           |          | 2 x 2 m               |
| Black matipo (kōhūhū)<br><i>Pittosporum tenuifolium</i>  | Small tree/tree  |           |          | 8 x 3 m               |
| Broadleaf (kapuka)<br><i>Griselinia littoralis</i>       | Tree             |           |          | 10 x 3 m              |
| Kahikatea*<br><i>Dacrydium dacrydioides</i>              | Tree             |           |          | 40-60 x 4 m           |
| Shining Karamū<br><i>Coprosma lucida</i>                 | Shrub/small tree |           |          | 5 x 2 m               |
| Rōhutu<br><i>Neomyrtus pedunculata</i>                   | Shrub            |           |          | 1.8 x 1 m             |
| Koromiko<br><i>Hebe salicifolia</i>                      | Shrub            |           |          | 1.8 x 1 m             |
| Kotukutuku*<br><i>Fuchsia excorticata</i>                | Tree             |           |          | 10 x 3 m              |
| Lemonwood (tarata)<br><i>Pittosporum eugenioides</i>     | Tree             |           |          | 9 x 4 m               |
| Lowland ribbonwood (manatu)<br><i>Plagianthus regius</i> | Tree             |           |          | 10 x 3 m              |
| Mānuka<br><i>Leptospermum scoparium</i>                  | Small tree       |           |          | 4 x 1.5 m             |
| Tōtara*<br><i>Podocarpus totara</i>                      | Tree             |           |          | 20 x 4 m              |
| Mahoe*<br><i>Meliccytus ramiflorus</i>                   | Tree             |           |          | 10 x 4 m              |
| Wineberry (makomako)*<br><i>Aristolelia 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 on the West Coast



*Des and Rosalie Shaffery farm on 180 effective hectares in Inchbonnie near Lake Brunner. Bruce Stream, a popular trout fishing spot, and many spring-fed streams run through their property before entering the lake. Riparian management on their farm has been a team approach with Des doing the fencing and Rosalie following up with the planting and weed control.*

Riparian management started when Des and Rosalie fenced off their waterways 15 years ago, recognising the environmental benefits of managing their streams. They received a riparian management plan from the West Coast Regional Council giving them a clear direction in an achievable timeframe.

Des and Rosalie find that low lying carex species work well beside the stream as they are resilient to flooding and bounce back when the flood passes. In many places they have found that regeneration of native plants has occurred naturally, and with addition of weed control, the area has thrived.

Controlling invasive watercress regularly with herbicide (or harvesting) is a major component of their riparian management. Watercress can smother plants and can block drains and culverts. However, it doesn't occur where plants have shaded it out.

Planting has improved the look of the farm. Putting in bridges and culverts has provided easier stock movement and fencing along streams gives them a point to break-fence to.



### TOP TIPS Des and Rosalie Shaffery

***“Use natural regeneration to your advantage”***

Native plants will often come back by themselves thanks to the abundance and proximity of native forests and wetlands. When left to regenerate, fenced areas will still require active weed control to help them establish.

***“Give yourself room to plant”***

When fencing riparian areas think about what plant species you will use. A small riparian zone will only allow for low lying sedges and grasses. If you would like to plant trees and shrubs a wider riparian zone is best. A wider fence set back will reduce the damage to the fence from flooding.

***“Use hardy plants that can tolerate the West Coast conditions”***

High winds, heavy frosts and cold can damage or kill some natives that are planted in exposed areas. Riparian areas require initial planting of hardy species first. After four or five years these plants will provide shelter, allowing you to use a wide variety of native plants.

## 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.

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

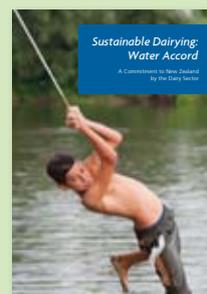
*The Sustainable Dairying: Water Accord (Water Accord)* was developed in 2013 by the dairy industry and is a commitment to manage the land in a way that contributes to achieving water quality desired by New Zealanders. Good riparian management is a requirement of the Water Accord.

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.



West Coast 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:

- Construction of bridges, culverts and dams
- Any activity disturbing the bed of a river or lake including channel realignment or deepening, dry cuts, gravel extraction, piping and planting of vegetation
- Drainage of a wetland or the creation or deepening of drains close to a wetland
- Standoff pads within 50m of a waterway (including sacrifice paddocks).

West Coast Regional Council's definition of a river is: "a continually or intermittently flowing body of fresh water; including streams and modified watercourses; but does not include an artificial watercourse (e.g. irrigation canal, or farm drainage canal), or ephemeral water bodies. A storm flowpath that carries flow only for a short period after heavy rain is not considered to be a river".

