

# Waikawa Catchment Group

## Slow the Flow / Erosion Mitigation Project

A community-led project implementing erosion and sediment-loss mitigations to protect the Waikawa River.



Ministry for the  
**Environment**  
*Manatū Mō Te Taiao*

Essential Freshwater Fund



**THRIVING  
SOUTHLAND**  
*Tōmū ana te whenua. Tōmū ana te takata.*  
*A thriving, prosperous land. A thriving, prosperous people.*

# The Waikawa Catchment Group

The Waikawa Catchment Group was formed in 2009, when a group of farmers and community members came together to understand more about their catchment, including what was happening in the water, native bush, and on farms.

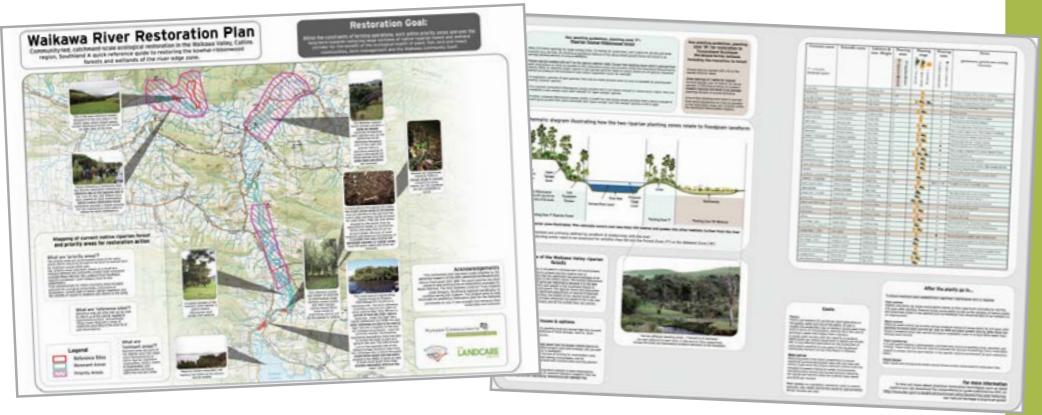
The Waikawa River runs through the catchment and is used for swimming, fishing, and other recreational activities. Over time, the Group has grown to include more than 30 people who are working to improve water quality and look after the wider environment.

## Riverbank Protection

In the 1980s, the west branch of the Waikawa River was so dynamic that it was regularly washing Kowhai and Ribbonwood plants into the river. The Catchment Board (now Environment Southland) recognised the need for action and introduced a targeted rate on landowners along the west branch to fund erosion control efforts.

With that funding, they trialled several different approaches to reduce erosion before settling on removing gravel beaches from the river and installing railway irons and gabion-type cages filled with river gravel to stabilise the banks. This method worked best where landowners also planted Moutere Willows along the riverbank and fenced off the river using a three-wire electric fence. The three-wire design was ideal, as it allowed floodwaters to pass through without causing damage, unlike netting or seven-wire fences.

With regular maintenance to prevent gravel build-up, and ongoing planting and fencing, the riverbanks on the west branch are now stabilised.



## Catchment Group History

Over the past 15 years, the Waikawa Catchment Group has delivered a wide range of initiatives—from stream habitat assessments and pest control workshops to on-farm discussion groups focused on sustainable land management. They have also worked alongside partners like Janet Gregory from NZ Landcare Trust to develop the Waikawa River Restoration Plan. This plan set out a long-term vision to restore significant areas of native riparian forest and wetland corridors, aiming to improve ecological health for plants, birds, fish, and insects—while also supporting practical outcomes for farmers and the wider community.



*Vision*  
a catchment the community is proud of  
a river with the best possible water quality  
a community that is committed to its environment



*Values*  
long-term care for the catchment  
practical environmental improvements  
working together to get things done.

## Building Knowledge

The Waikawa Catchment group were strongly encouraged to contribute to the development of an Intergrated catchment plan (ICMP) if they wished to receive substantial future funding from Environment Southland and the Ministry for the Environment.

An ICMP is a non-statutory, community-led plan designed to reflect local knowledge, values and aspirations, and to help identify practical actions that can improve environmental outcomes across a whole catchment.

The Waikawa Catchment Group played an active role as community stakeholders in the ICMP process, helping to identify practical opportunities and priority areas for environmental improvement. This included mapping and assessing parts of the catchment, contributing ideas, and identifying priority topics for improvement.

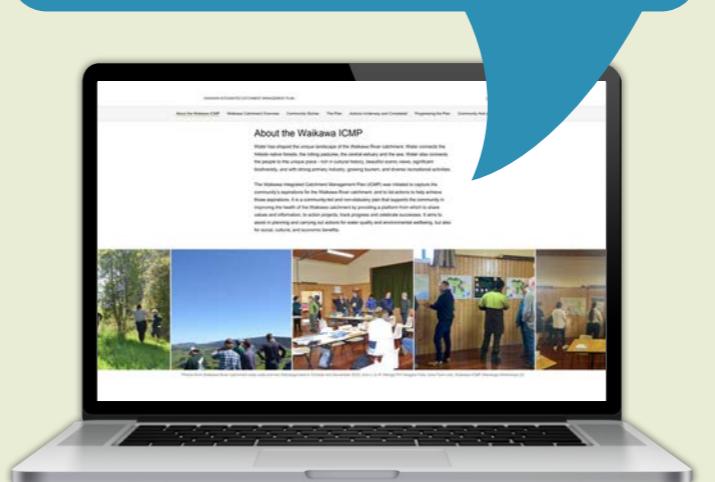
They highlighted focus areas such as:

- Riparian enhancement (fencing, biodiversity corridors, protection of native species)
- Erosion control and sediment management
- Wetland identification and restoration
- Weed and pest management
- Mapping, monitoring and baseline data collection
- Flood resilience using natural systems
- Knowledge sharing and upskilling opportunities

An interactive, web-based ArcGIS StoryMap was developed, using photos, data and community stories to illustrate what makes the Waikawa catchment special—and where action could make the biggest difference.

Insights from this process helped shape the Group's next steps—targeting funding applications for on-the-ground action in high-priority areas.

**View the ICMP here:**  
[www.thrivingsouthland.co.nz/waikawa](http://www.thrivingsouthland.co.nz/waikawa)

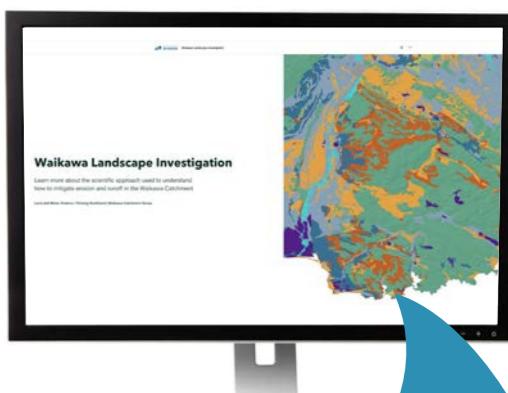


## Refining Big Ideas into Targeted Plans

Following the ICMP development, the Group successfully applied for funding through the Ministry for the Environment's, Access 2 Experts programme. This work explored why erosion and sediment loss are key contributors to water quality challenges in the Waikawa Catchment.

The group received a detailed assessment of the landscape's natural features—soils, slopes, geology, and waterways, supporting prioritisation of where the susceptibility to erosion and sediment loss is highest at catchment and sub-catchment scales

This work enabled a targeted approached to identifying solutions using natural infrastructure—like planting on low-productivity land, designing sediment traps and wetlands. It also informed how to prioritise planting in areas that would support taonga species and provide the greatest ecological benefit.



**View the landscape assessment here:**  
[www.thrivingsouthland.co.nz/waikawa](http://www.thrivingsouthland.co.nz/waikawa)

## From Plans to Planting: Action on the Ground

With strong concepts from the ICMP, targeted challenges and locations from the A2E work, the Group were ready to get their spades dirty.

The Slow the Flow / Erosion Mitigation project was developed by the Catchment Group and funded through the Minsitry for the Environment. It enabled seven “sub-projects” to be funded to mitigate erosion and sediment loss.

The project had a very tight timeframe (February–June 2025), with the Farmers achieving a remarkable amount. The “sub-project” Farmers received direct support for design and construction, guidance on timing, project planning, and opportunities to share learnings with others.

# Understanding the Waikawa Landscape

In late 2024, the Waikawa Catchment Group received funding through the Ministry for the Environment's Access 2 Experts programme. This initiative connects Catchment Groups and other local entities with technical experts to support their understanding of water quality issues.

The Waikawa Catchment Group nominated Land & Water Science as their preferred specialist. Together, they developed a project to explore why erosion and sediment loss are key contributors to water quality challenges in the Waikawa Catchment.

Land & Water Science delivered a detailed assessment of the landscape's natural features—soils, slopes, geology, and waterways—to better understand the causes of runoff and turbidity in the catchment.

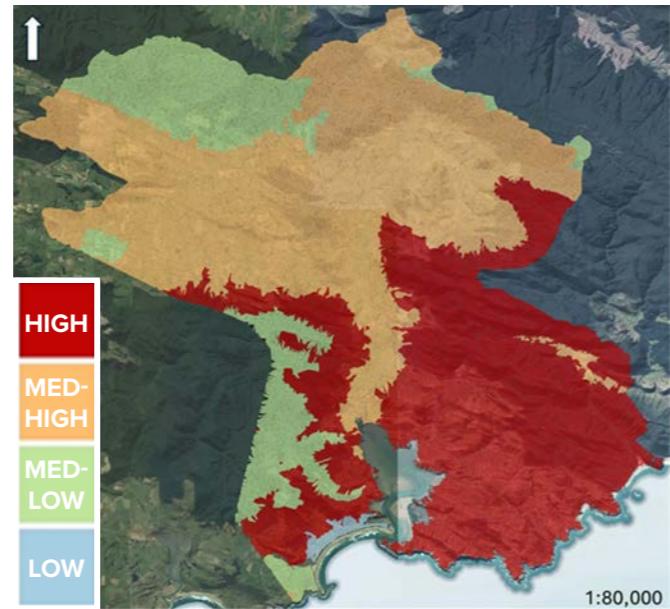
Contact Thriving Southland to request a digital copy of the landscape report.

## Summary of findings

Over 90% of the Waikawa Catchment is covered by fine-textured, silt-rich soils that are naturally prone to erosion and runoff—particularly on steeper slopes or compacted areas. Mapping shows that erosion and runoff risk vary depending on soil type, slope, and how water moves through the land.

An interactive map developed through this project helps landowners identify where runoff starts, how it moves through their land, and where mitigation will be most effective.

**View and use the landscape assessment here:**  
[www.thrivingsouthland.co.nz/waikawa](http://www.thrivingsouthland.co.nz/waikawa)



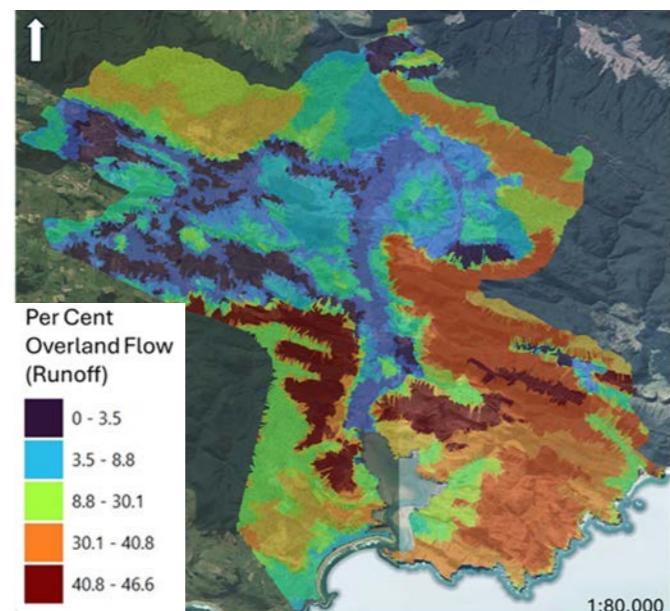
### Runoff Susceptibility

Soil permeability—how easily water moves through the soil—helps determine how likely an area is to generate surface runoff.

Runoff occurs when water flows over the land instead of soaking in, often carrying sediment, nutrients, and animal waste into waterways.

This map shows how susceptibility to runoff varies across the Waikawa Catchment. Areas in red and orange are more prone to runoff; areas in green and blue are less susceptible.

The variation reflects natural differences in soil type, slope, and geology across the catchment.



### Estimated Runoff from Rainfall

This map shows the estimated percentage of annual rainfall that becomes overland flow (surface runoff)—water that moves across the land rather than soaking into the soil.

For example, if average annual rainfall is 1400 mm, areas shown in dark red could generate around 40% runoff—equivalent to 560 mm.

Runoff percentages vary across the catchment due to differences in soil permeability, slope, and geology, which influence how much water can infiltrate the ground versus flow over it.



### Watersheds

A watershed is an area of land where all rainfall drains to the same low point—such as a swale, stream, or river.

Understanding the size and shape of a watershed helps when planning mitigation, as it indicates how much water (and potential sediment) might flow through a given area—informing the scale of intervention needed.



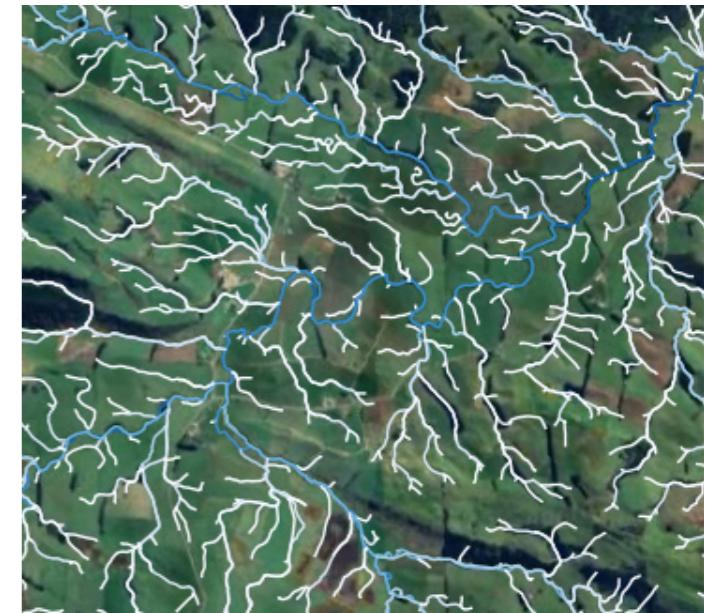
### Trap and Treat Tool

This map highlights natural hollows and low-lying areas in the landscape where water tends to slow/pond after rain.

These sites are ideal for creating wetlands, sediment traps, or simple bunds, as the landscape already encourages water retention. Small changes—like planting or reshaping—can turn these sites into highly effective mitigation features with minimal effort.

**Need help deciding where to act?**

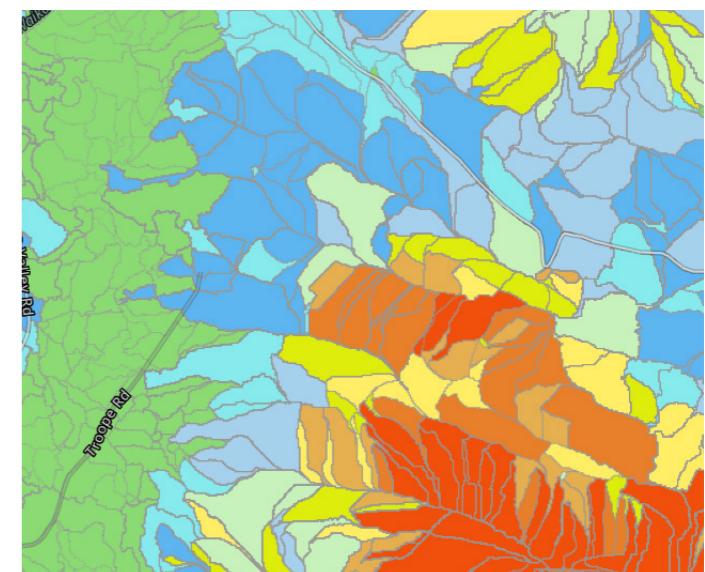
The interactive map is built around the Source-Pathway-Receptor (SPR) approach. It helps you trace where runoff starts, how it moves, and where to intercept it before it reaches a stream.



### Stream Network

The stream network map shows all the streams and open drains in the Waikawa Catchment and how they are connected across the landscape.

- White lines represent ephemeral streams, which flow only after heavy or sustained rain.
- Light blue lines indicate intermittent streams, which flow for part of the year (typically 3–6 months).
- Dark blue lines show perennial streams, which flow year-round except during extreme drought.



### Erosion Susceptibility

This map shows the natural susceptibility of each small watershed to erosion and fine sediment loss, using a colour scale to highlight areas of higher or lower risk.

Each watershed (approximately 10 ha) is colour-coded to help landowners prioritise areas most at risk. The map also shows the stream network, so you can trace the likely pathways sediment may take from high-risk areas to receiving waterways like the Waikawa River.

Understanding where erosion is likely—and how sediment moves—helps identify the best places to slow water and reduce losses.



# Slow the Flow / Erosion Mitigation Project

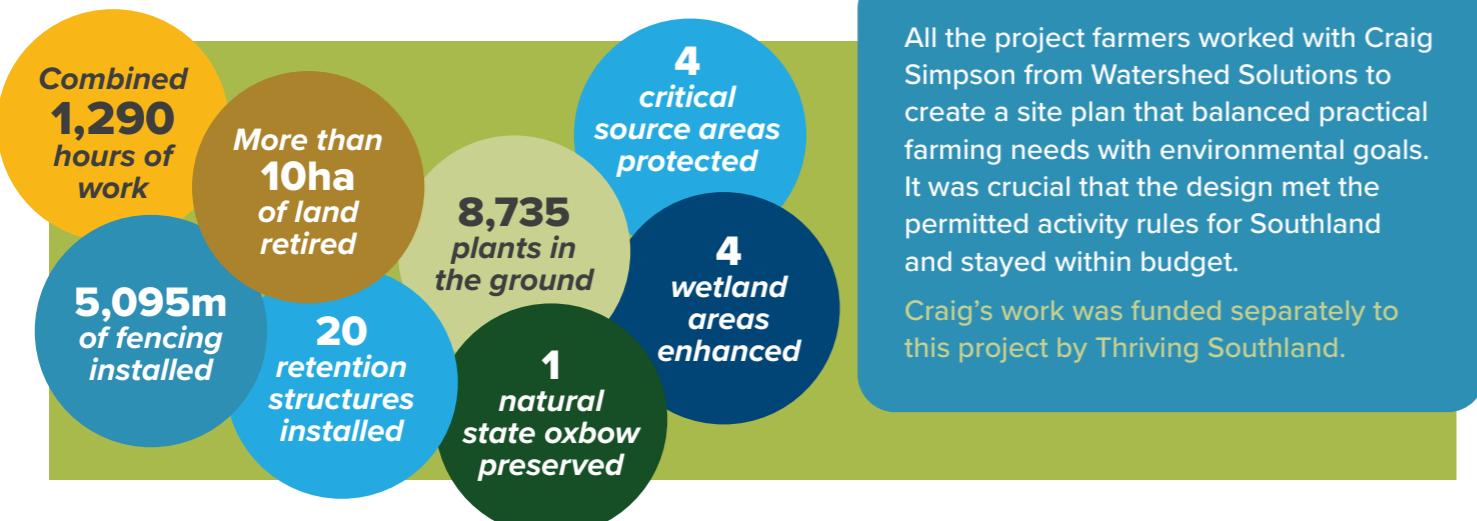
The Waikawa Catchment Group's Slow the Flow/Erosion Mitigation Project began after they helped develop a local Integrated Catchment Management Plan.

A key goal from the plan was to tackle erosion and reduce sediment in the Waikawa River. Erosion and sedimentation are natural processes, but they can be worsened by different types of land use, including urban, rural, and industrial activities.

With funding from the Ministry for the Environment (through Environment Southland), seven projects were selected which met strict project criteria, and the farmers carried out work across these seven sites, to make a real, cumulative impact in reducing sediment loss.

Craig Short, Ross Bergius, Roger, Alison, Nikki and Jeremy Thomas, Kathryn and Allan Marshall, Sarah and Basil McLean, Daryll, Carmen and Regan Stratford, and Roger Buckingham had their sites selected for the project. These became known as the seven "sub-projects".

The farmers had to stick to a budget for each of their sub-projects, had to do or pay for their own fencing labour, get the plants in the ground at no labour cost, contribute to project meetings (in-person and online), regular site visits, record all the time they and others spent working on their sites in the Resolution app, and provide updates, invoices and photos to the project manager over the 5 month project period. It was common to see the farmers at each others sites, on the end of an auger, planting plants or helping out in any way they could.



## What does this work achieve?

### Fencing to Exclude Stock

- ✓ Fencing of gullies, waterways, swales, wetlands, and riparian areas excluded stock from sensitive zones.
- ✓ Reduced erosion and sediment generation in gullies, swales, and riverbanks.
- ✓ Prevented soil disturbance in low-lying and/or high-use areas.

### Planting and Vegetative Stabilisation

- ✓ Planting stabilised eroding banks, gully edges, and riparian margins.
- ✓ Dense or strategic planting in swales and runoff-prone areas intercept flow and help trap contaminants.
- ✓ Vegetative buffer strips and riparian planting slow water velocity and enhance bank stability.
- ✓ Plantings also provide shade and shelter, benefiting both ecosystem health and stock.

### Sediment Capture and Water Flow Management

- ✓ Structures and vegetation slow water movement, reducing erosion and allowing sediment to settle before entering waterways.
- ✓ Water ponding behind dams, in swales, or vegetated areas allows sediment to settle and be captured.
- ✓ Reduced water velocity improves downstream bank stability and water quality.

### Wetland Creation and Enhancement

- ✓ Ponding from slowed flow created or enhanced wetland environments in unproductive or retired areas.
- ✓ Wetlands supported further contaminant removal and provided diverse habitats.
- ✓ Restoration of oxbow and floodplain areas increases landscape diversity and slows water movement.

### Biodiversity and Aesthetics

- ✓ Increased biodiversity and habitat for aquatic and bird life.
- ✓ Created visually appealing, natural environments.

### Infrastructure Interventions

- ✓ Sediment retention structures, flow interceptors, and detainment features were installed to reduce runoff speed and capture contaminants.
- ✓ Interception structures prevented waterlogging and contamination from high-use areas.
- ✓ Provisions were made for fish passage around instream structures to maintain aquatic connectivity.

### Water Quality and Contaminant Management

- ✓ Slowed and filtered water through planted and ponded areas helped trap sediment and contaminants before reaching waterways.
- ✓ Critical source areas were protected through fencing, planting, and hydrological interventions.

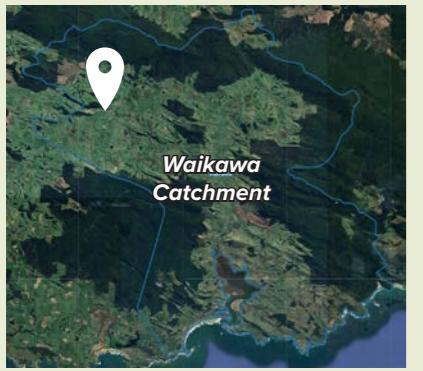
**Keeping the project on track, capturing and sharing the great work.**

Additional to the seven sub-projects, the wider project included funding for a project manager to help manage the funding, reporting and timeframes, and some "extension" work.

Extension refers to different methods of sharing information about the project so others can see what was done, learn from, and be inspired by it.

- An interactive online mapping platform was produced by Land & Water Science to share the earlier landscape analysis work and related reports printed.
- Case study brochures for each sub-project, and this booklet were developed to capture project progress and outcomes. This included development of a catchment group logo.
- A field day was hosted to showcase the completed sub-project sites.
- Signage was created to inform passing traffic when they are entering the catchment group area, and smaller signs developed for the roadsides near each of the sub-project sites.





## Site 1: Short

Craig and Samara noticed terracettes (small step-like formations caused by earth movement) forming at the top of a gully that had also become a bit of a "stock trap". They saw this unproductive area as a good opportunity to put some mitigations in place to help reduce erosion and sediment entering the Waikawa River.



**“**Fencing off this gully made sense for the farm and the environment.**”**



### Project Stats

Project period	Feb - June 2025
Project cost	\$20,792
Farmer 'in-kind' contribution	\$27,358
Fencing	1073m
Plants	1260
Retention structures	9
Area retired	13,490m <sup>2</sup>



### What they did:

Fencing around the gully with good margins, especially on the steeper slopes. A new dam with culvert was built, along with a one-metre-deep sediment trap upstream. Eight small rock detention structures were installed in the stream to slow water flow and capture contaminants, while still allowing fish passage. Over time, these will help sediment build up and support the restoration of a previously drained gully. Native plants were established throughout the area.



**After**



## Site 2: Bergius

Ross had identified a section of creek on his farm that would benefit from native plantings and stock exclusion to help slow down water movement and reduce the amount of erosion created.



### Project Stats

Project period	Feb - June 2025
Budget	\$11,888
Farmer 'in-kind' contribution	\$12,999
Fencing	685m
Plants	900
Wetland areas	3
Critical source areas protected	4
Area retired	2542m <sup>2</sup>

**“**Seeing the swales full of native plantings and utilising them to reduce sediment loss is a real highlight of the project**”**



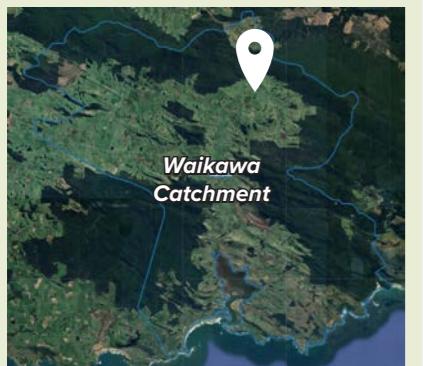
### What they did:

The site plan focused on fencing the waterway and targeting high-impact areas for dense native planting, rather than broad-scale riparian planting. Key to this was the use of swales - natural flow paths where water tends to accumulate and carry contaminants from land to water. By densely planting these swales, the aim was to intercept and slow the flow, allowing more time for contaminants to settle and be filtered.

One critical source area was further enhanced with a small bund to create a mini edge-of-field wetland, boosting its ability to treat runoff.



**After**



## Site 3: Thomas

Roger, Alison, Jeremy & Nikki Thomas have been steadily enhancing their farm over the last six years with fencing and native plantings. This site was working its way up their priority list due to its high traffic load and terracettes (small step-like formations caused by earth movement) on the gully slopes. It was also identified by both Land & Water Science and Environment Southland as an area of great potential. The Thomases wanted to implement fencing, planting and some other sort of mitigation to help reduce erosion and sediment getting into the Waikawa River.



### Project Stats

Project period	Feb - June 2025
Budget	\$18,051
Farmer 'in-kind' contribution	\$27,449
Fencing	818m
Plants	1615
Retention structures	2
Area retired	9,849m <sup>2</sup>

With most waterways already fenced, this site was the logical next step



### What they did:

The goal was to slow, mitigate, and capture contaminant movement in this intermittently flowing, unnamed tributary of the Waikawa River. The project involved cleaning out sediment upstream of a farm culvert, installing a new dam, fencing off the stream, and undertaking riparian planting alongside it, including dense planting within the stream bed to further capture sediment and support habitats for aquatic species.



After



## Site 4: Marshall

Allan and Kathryn bought this property in 2019. Since then they have been updating fences and tracks, and have changed to a lighter class of stock, all to reduce the amount of erosion and sediment generation from the hill country.

Landscape analysis work completed by Land & Water Science identified this part of the catchment as being highly susceptible to erosion. As a result of these findings, the Marshalls decided to do even more to protect the Waikawa River.



### Project Stats

Project period	Feb - June 2025
Budget	\$32,460
Farmer 'in-kind' contribution	\$40,589
Fencing	1,081m
Plants	1500
Retention structures	6
Area retired	22,309m <sup>2</sup>



### What they did:

They installed a permanent fence around the restoration areas to exclude stock, allowing for natural revegetation, along with the planting of additional native species. Dams were created to impound water, allowing time for sediment to settle out of suspension. Provision was made for future digger access to remove sediment accumulating behind the dam walls.



After





## Site 5: McLean

Sarah and Basil McLean had identified the paddocks and lane leading into their yards as high-use areas, with a high risk of sediment loss. They wanted to utilise the vegetated gully alongside this area to help mitigate any losses.

Landscape analysis by Land & Water Science identified this part of the catchment as highly susceptible to erosion. As a result of these findings, and the McLeans' drive to take action, their site was selected for the project.

### What they did:

They constructed a fenced-off flow path interceptor to divert shallow groundwater moving downhill from the lane and adjacent paddocks. The aim was to direct this water into the tributary, rather than allowing it to emerge as overland flow that would carry sediment to stream. This involved digging a perpendicular ditch, filling it with rock and gravel, and installing a length of drainage coil to redirect shallow groundwater into the vegetated stream.



### Project Stats

Project period	Feb - June 2025
Budget	\$14,421
Farmer 'in-kind' contribution	\$18,830
Fencing	428m
Plants	960
Retention structures	3
Area retired	9,785m <sup>2</sup>

Before: gully



### After



*"We wanted to do something to protect the environment that was practical and high impact"*



## Site 6: Stratford

Carmen, Daryll and Regan Stratford identified this part of their farm as an area that needed tidying up and felt that an environmental solution made more sense than a productive farming one.

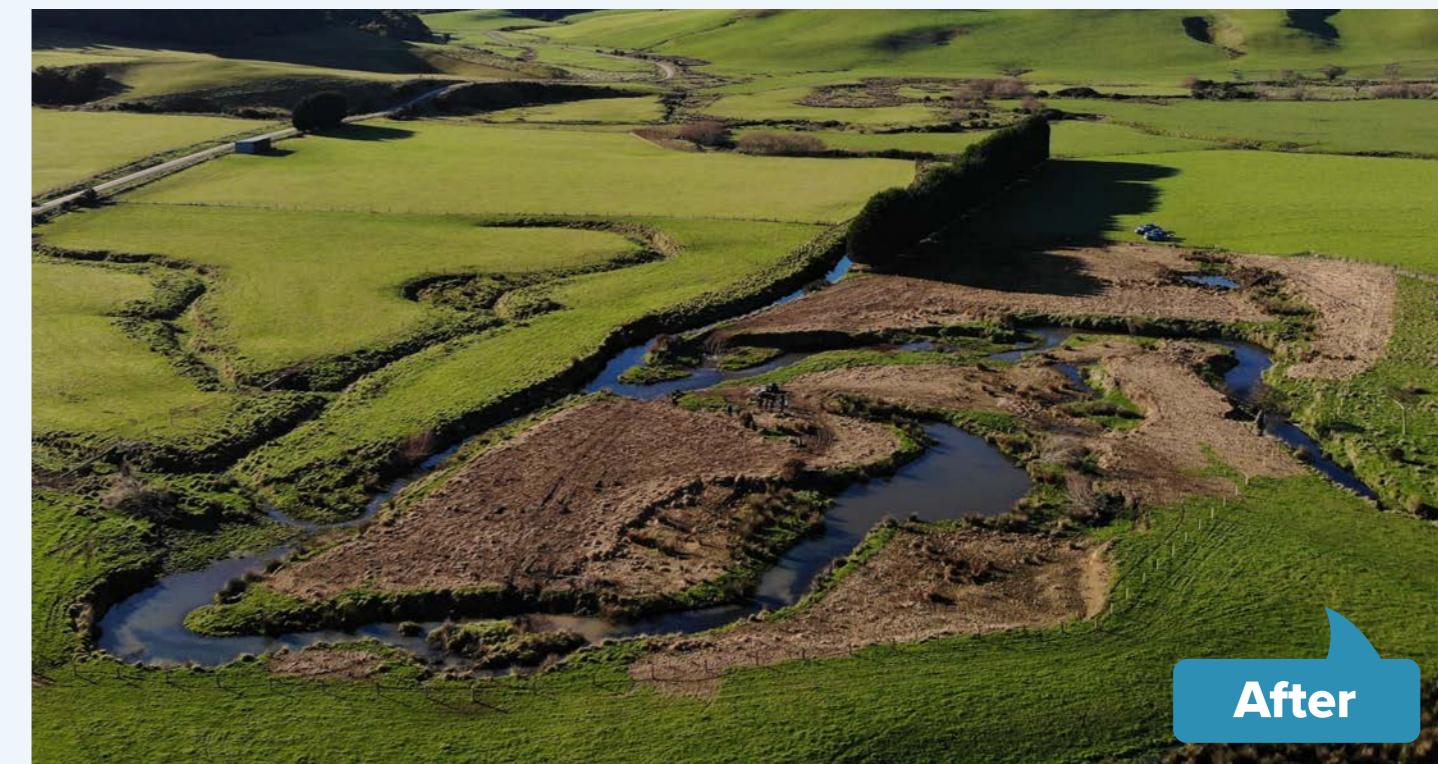
This tricky corner includes the Waikawa River, a feeding tributary, wetland features, and a "paper road", all adding to the complexity of developing a solution. The site plan had to balance Southland District Council requirements (for the paper road), practical farming needs, and environmental goals.

Fonterra also contributed funding towards this project, as they too recognised the opportunity the site presented.

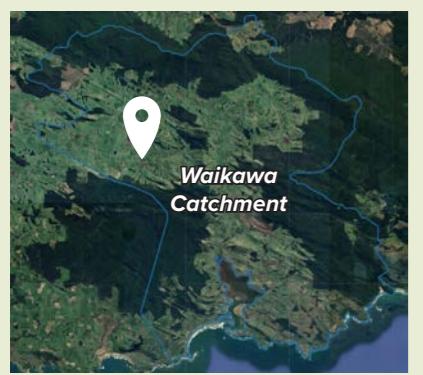


### What they did:

They retired and enhanced the ecological and biodiversity values of an oxbow wetland on the Waikawa River by implementing new fencing and completing strategic native plantings. The project also included existing willow control work and the installation of pedestrian and maintenance access points, as per the agreement with Southland District Council.



### After



## Site 7: Buckingham

Many years ago, this site on Roger Buckingham's property held an old pine plantation. The harvesting of the pines caused stream incision and bank erosion. At times, the stream running through the site experiences heavy flows, and at the outset of this project, there was still some minor bank erosion present. Roger saw this as an area of opportunity to enhance, given its history and its natural (unstraightened) state.

By installing fencing and planting native species throughout the area, instream values are protected through improved bank stabilisation, interception of runoff from adjacent land, and enhanced biodiversity

### Project Stats

Project period	Feb - June 2025
Budget	\$8,852
Farmer 'in-kind' contribution	\$13,770
Fencing	430m
Plants	700
Oxbow area	1
Area retired	13,116m <sup>2</sup>

“The natural flow of the creek, planted out with native plants will let the stream slow down and help stabilise the banks”



**After**



*thank you*  
to everyone who contributed to the success of this project



Ministry for the  
Environment  
*Manatū Mō Te Taiao*

| Essential Freshwater Fund



environment  
**SOUTHLAND**  
REGIONAL COUNCIL  
*Te Taiao Tonga*



**THRIVING**  
**SOUTHLAND**

*Tōnui ana te whenua. Tōnui ana te takata.  
A thriving, prosperous land. A thriving, prosperous people.*



**Poppy Hardie**  
Project Management  
& Agri-Extension



South Coast  
Promotions Inc.

Drone Footage  
Anna Templeton



**“to have a catchment the community is **proud** of, a river with the best possible water quality, and a community that is **committed** to its environment”**



**Slow the Flow /  
Erosion Mitigation  
Project Class of 2025**

## Want to Learn More?

Check out the Waikawa Catchment Group page on the Thriving Southland website, or come along to one of our community events or field days.

Whether you're a local landowner, nature lover, or just curious about your local environment, you're welcome to be part of the journey.

