



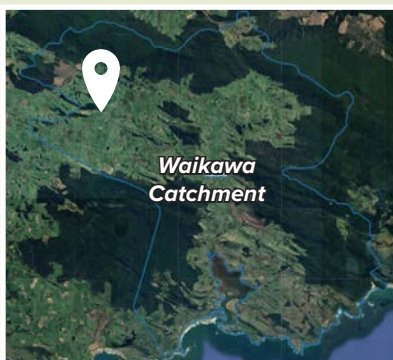
Tackling Erosion in the Waikawa Catchment

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 of the plan was to tackle erosion and reduce sediment in the Waikawa River. While erosion and sedimentation are natural processes, they can be worsened by various types of land use, including urban, rural and industrial activities.

With funding from the Ministry for the Environment (through Environment Southland), seven farmers carried out work across seven sites to make a real, cumulative impact in reducing sediment loss.

Short | Project Stats



Project period	Feb - June 2025
Project cost	\$14,466
Farmer 'in-kind' contribution	\$22,678
Fencing	603m
Plants	1010
Retention structures	9
Area retired	5590m ²

SLOW THE FLOW / EROSION MITIGATION PROJECT - CASE STUDY

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.

They worked with Craig Simpson from Watershed Solutions to develop a site plan that balanced practical farming needs with environmental goals. It was also crucial that the design complied with Southland's permitted activity rules and stayed within budget.



Before: aerial view of site



Before: bend in gully where detention bunds will go.



Before: top of gully



Site plan

The Plan

Fencing 603m 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.

"Fencing off this gully made sense for the farm and the environment."

What does this work achieve?

Fencing the gully to exclude stock

- Reduced erosion at head of gully where natural terracettes were occurring
- Reduced bank erosion without stock access

Planting

- Stabilised banks and gully edges
- Sediment capture
- Slowed water movement, reducing erosion further downstream
- Increased biodiversity
- Increased habitat for aquatic and bird life
- Aesthetically beautiful



During: carting rocks



During: creating the new dam

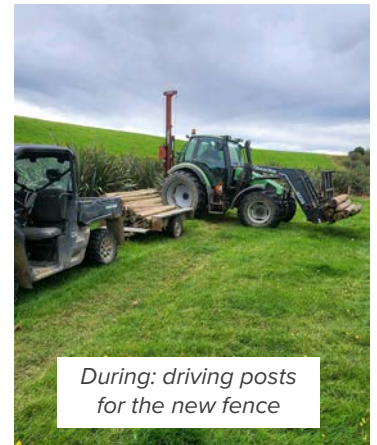
Sediment retention structures

- Slow water movement and create ponding, allowing sediment to settle to the bottom and be captured before entering a waterway
- Water ponding behind structures onto planted, unproductive gully edges creates wetland environment, supporting further contaminant removal
- Structures that slow the velocity of water movement have a positive impact on water velocity and bank stability of downstream waterways

During: new fence partially erected



During: placing rocks to create detainment structures



During: driving posts for the new fence

After



Ministry for the
Environment
Manatū Mō Te Taiao

Essential Freshwater Fund



environment
SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga



THRIVING
SOUTHLAND
Tōtahi ana te whenua. Tōtahi ana te takatā.
A thriving, prosperous land. A thriving, prosperous people.





SLOW THE FLOW / EROSION MITIGATION PROJECT - CASE STUDY

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.

He worked with Craig Simpson from Watershed Solutions to create a site plan that balanced practical farming needs with environmental goals. It was crucial that the design met the permitted activity rules for Southland and stayed within budget.

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.

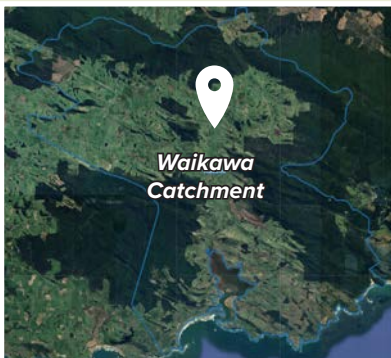
Tackling Erosion in the Waikawa Catchment

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 of the plan was to tackle erosion and reduce sediment in the Waikawa River. While erosion and sedimentation are natural processes, they can be worsened by various types of land use, including urban, rural and industrial activities.

With funding from the Ministry for the Environment (through Environment Southland), seven farmers carried out work across seven sites to make a real, cumulative impact in reducing sediment loss.

Bergius | 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 ²

Before: aerial view of site



Before: planting site #5



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



Before: unfenced waterway



Site plan

What does this work achieve?

Fencing the waterway & swales to exclude stock

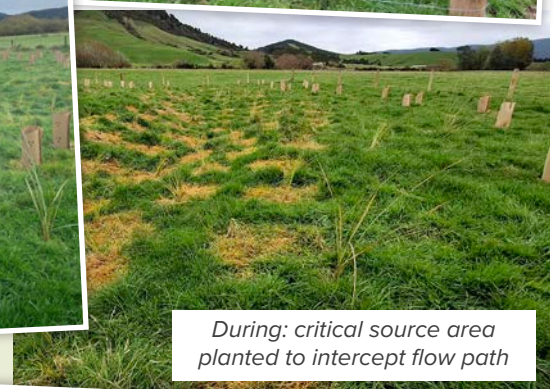
- Reduced bank erosion without stock access
- Reduced soil disturbance in low-lying swales

Planting

- Stabilised banks
- Sediment capture
- Slowed water movement to reduce erosion further downstream
- Increased biodiversity
- Increased habitat for aquatic and bird life
- Aesthetically beautiful
- Supported contaminant removal in wetland areas
- Protected critical source areas

Flow path interceptor and wetland establishment

- Densely planted swales intercept water movement, slow flow, and create ponding, allowing sediment to settle and be captured before entering a waterway
- Water ponding onto planted swales creates a wetland environment, supporting further contaminant removal
- Slowing water in swales and critical source areas improves downstream water velocity and bank stability



Ministry for the
Environment
Manatū Mō Te Taiao

Essential Freshwater Fund



environment
SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga



THRIVING
SOUTHLAND
Tōtahi ana te whenua. Tōtahi ana te takatā.
A thriving, prosperous land. A thriving, prosperous people.



Waikawa
Catchment Group



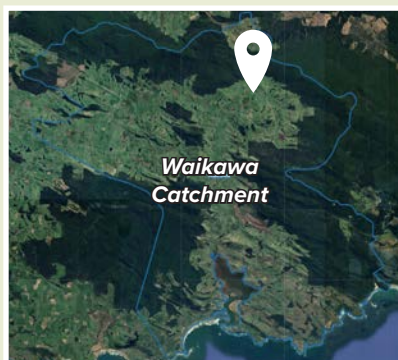
Tackling Erosion in the Waikawa Catchment

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 of the plan was to tackle erosion and reduce sediment in the Waikawa River. While erosion and sedimentation are natural processes, they can be worsened by various types of land use, including urban, rural and industrial activities.

With funding from the Ministry for the Environment (through Environment Southland), seven farmers carried out work across seven sites to make a real, cumulative impact in reducing sediment loss.

Thomas | Project Stats



Project period	Feb - June 2025
Budget	\$14,145
Farmer 'in-kind' contribution	\$23,449
Fencing	627m
Plants	1110
Retention structures	2
Area retired	6049m ²

SLOW THE FLOW / EROSION MITIGATION PROJECT - CASE STUDY

Site 3: Thomas

Roger, Alison and Jeremy 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.

They worked with Craig Simpson from Watershed Solutions to create a site plan that balanced practical farming needs with environmental goals. It was crucial that the design met the permitted activity rules for Southland and stayed within budget.



The Plan

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.

What does this work achieve?

Fencing the gully to exclude stock

- Reduced erosion on the sides of the gully where natural terracettes were occurring
- Reduced bank erosion without stock access

Planting

- Stabilised banks and gully edges
- Sediment capture
- Slowed water movement to reduce erosion generation further downstream
- Increased biodiversity
- Increased habitat for aquatic and bird life
- Aesthetically beautiful

Sediment retention structures

- Slowed water movement, allowing water to settle behind dam walls, where sediment can be captured and removed before it moves downstream
- Dense planting of vegetation slowed flow, creating wet areas in the gully that function as a wetland environment and support further contaminant removal
- Structures that reduce water velocity improve downstream bank stability and water quality

Fish passage

- This was thoughtfully considered, with provisions made for adequate fish passage around the dams



After



Ministry for the
Environment
Manatū Mō Te Taiao

Essential Freshwater Fund



THRIVING
SOUTHLAND
*Tōtahi ana te whenua. Tōtahi ana te takatā.
A thriving, prosperous land. A thriving, prosperous people.*





Tackling Erosion in the Waikawa Catchment

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 of the plan was to tackle erosion and reduce sediment in the Waikawa River. While erosion and sedimentation are natural processes, they can be worsened by various types of land use, including urban, rural and industrial activities.

With funding from the Ministry for the Environment (through Environment Southland), seven farmers carried out work across seven sites to make a real, cumulative impact in reducing sediment loss.

Marshall | Project Stats



Project period	Feb - June 2025
Budget	\$29,085
Farmer 'in-kind' contribution	\$36,589
Fencing	871m
Plants	1300
Retention structures	4
Area retired	16,109m ²

SLOW THE FLOW / EROSION MITIGATION PROJECT - CASE STUDY

Site 4: Marshall

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

Some 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.

They worked with Craig Simpson from Watershed Solutions to create a site plan that balanced practical farming needs with environmental goals. It was crucial that the design met the permitted activity rules for Southland and stayed within budget.



The Plan

To install a permanent fence around the restoration areas to exclude stock, allowing for natural revegetation, along with the planting of additional native species. Four 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.

What does this work achieve?

Fencing to exclude stock

- Reduced erosion on the sides of the gully where natural terracettes were occurring
- Reduced bank erosion without stock access

Planting

- Stabilised banks and gully edges
- Sediment capture
- Slowed water movement, reducing erosion further downstream
- Increased biodiversity
- Increased habitat for aquatic and bird life
- Aesthetically beautiful

Sediment retention structures

- Slowed water movement and allowed water to settle behind dam walls, so sediment could be captured and removed instead of flowing downstream (a key goal of this project)
- Poned water behind the structures, onto planted or revegetating unproductive areas, created a wetland environment that supports further contaminant removal
- Structures that reduce water velocity improve downstream water quality and bank stability

Fish passage

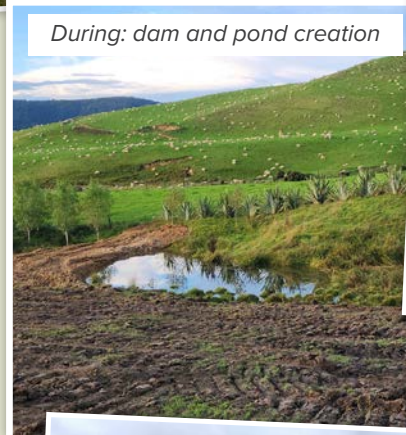
- This was thoughtfully considered, with provisions made for adequate fish passage around the dams



During: pond excavation process



During: fish passage outlet



During: dam and pond creation



During: dam and pond creation

After



Another sediment trap downstream



Ministry for the
Environment
Manatū Mō Te Taiao

Essential Freshwater Fund



environment
SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga



THRIVING
SOUTHLAND
Tōtahi ana te whenua. Tōtahi ana te takatā.
A thriving, prosperous land. A thriving, prosperous people.



Waikawa
Catchment Group



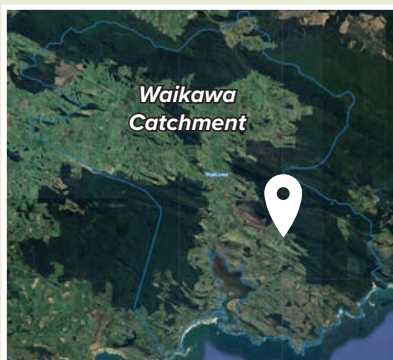
Tackling Erosion in the Waikawa Catchment

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 of the plan was to tackle erosion and reduce sediment in the Waikawa River. While erosion and sedimentation are natural processes, they can be worsened by various types of land use, including urban, rural and industrial activities.

With funding from the Ministry for the Environment (through Environment Southland), seven farmers carried out work across seven sites to make a real, cumulative impact in reducing sediment loss.

McLean | Project Stats



Project period	Feb - June 2025
Budget	\$14,421
Farmer 'in-kind' contribution	\$18,830
Fencing	428m
Plants	700
Retention structures	3
Area retired	9,785m ²

SLOW THE FLOW / EROSION MITIGATION PROJECT - CASE STUDY

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, so they put the site forward for the Slow the Flow / Erosion Mitigation Project.

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.

They worked with Craig Simpson from Watershed Solutions to create a site plan that balanced practical farming needs with environmental goals. It was crucial that the design complied with Southland's permitted activity rules and stayed within budget.



Before: aerial view of site



Site plan



Before: gully



Before: high-use area to protect

The Plan

To construct 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 into the 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.

The gully restoration area was fully fenced to exclude stock and allow for natural regeneration, with native plants strategically planted in areas where they would have the most positive impact.

Sediment was also removed upstream of two culverts at natural sediment capture points to support their function. Downstream of these areas, native plants were added to act as contaminant filters.

The McLeans also improved drainage in the high-use holding paddock by fencing off one corner and heavily planting it to mitigate sediment and contaminant loss from that area.

What does this work achieve?

Fencing to exclude stock

- Reduced erosion within the gully
- Reduced bank erosion by preventing stock access

Planting

- Stabilised banks and gully edges
- Sediment capture
- Slowed water movement, reducing erosion further downstream
- Increased biodiversity
- Increased habitat for aquatic and bird life
- Aesthetically beautiful

Sediment retention structures

- Slowed water movement and created ponding, allowing sediment to accumulate and be captured before entering a waterway
- Ponding behind instream, densely planted riparian buffer areas created a wetland environment that supports contaminant removal
- Vegetative buffer strips helped slow water flow and allowed sediment to fall out of suspension
- Structures that reduce water velocity improved downstream water quality and bank stability

Interception structure

- Directed water before it surfaced, preventing the high-use area from becoming excessively wet, which would otherwise increase contaminant loss

During: interception channel dug, filled with rocks and drainage pipe to redirect shallow groundwater



During: sediment build up cleared and new ponding area created



During: fence posts in for new densely-planted riparian area



“We wanted to do something to protect the environment that was practical and high impact”



During: sediment build up cleared, new ponding area created

After



Ministry for the
Environment
Manatū Mō Te Taiao

Essential Freshwater Fund



environment
SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga



THRIVING
SOUTHLAND
Tōtahi ana te whenua. Tōtahi ana te takatā.
A thriving, prosperous land. A thriving, prosperous people.





SLOW THE FLOW / EROSION MITIGATION PROJECT - CASE STUDY

Site 6: Stratford

Carmen and Daryll 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.

They worked with Craig Simpson from Watershed Solutions to create a site plan that balanced Southland District Council requirements (for the paper road), practical farming needs, and environmental goals. It was crucial that the design met the permitted activity rules for Southland and stayed within budget.

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

Tackling Erosion in the Waikawa Catchment

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 of the plan was to tackle erosion and reduce sediment in the Waikawa River. While erosion and sedimentation are natural processes, they can be worsened by various types of land use, including urban, rural and industrial activities.

With funding from the Ministry for the Environment (through Environment Southland), seven farmers carried out work across seven sites to make a real, cumulative impact in reducing sediment loss.

Stratford | Project Stats



Project period	Feb - June 2025
Budget	\$14,907
Farmer ‘in-kind’ contribution	\$18,245
Fencing	580m
Plants	1500
Wetlands restored	1 (very large)
Area retired	29,671m ²



Before: aerial view of site

Site plan with paper road shown in purple



Before



The best use of this area is to be planted in native species



Before

The Plan

To retire and enhance 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

What does this work achieve?

Fencing to exclude stock

- Reduced erosion on the edges/banks of the wetland and river
- Reduced sediment generation without stock access

Planting

- Stabilised banks and wetland fringes
- Sediment capture
- Slowed water movement to reduce erosion further downstream
- Increased biodiversity
- Increased habitat for aquatic and bird life
- Aesthetically beautiful

Wetland restoration

- Retiring this area from production to create a biodiversity area with supporting native vegetation
- Recognising the value of the oxbow area, which adds to the diversity of the floodplain
- Retiring this area and allowing it to revegetate will aid in slowing water movement throughout the valley, allowing contaminants to settle and be captured. This was a key goal of the project.

During: site sprayed ready for planting and strainer posts installed

During: fence posts in and wire work underway

During: planting native plants

During: planting native plants

After



Ministry for the
Environment
Manatū Mō Te Taiao

Essential Freshwater Fund



environment
SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga



THRIVING
SOUTHLAND
Tōtahi ana te whenua. Tōtahi ana te takatā.
A thriving, prosperous land. A thriving, prosperous people.



Waikawa
Catchment Group



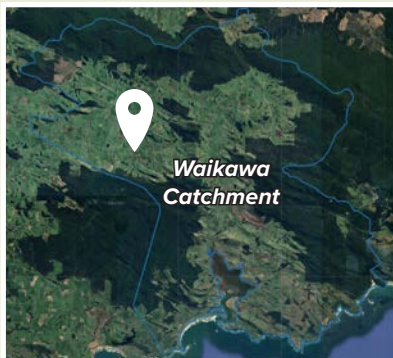
Tackling Erosion in the Waikawa Catchment

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 of the plan was to tackle erosion and reduce sediment in the Waikawa River. While erosion and sedimentation are natural processes, they can be worsened by various types of land use, including urban, rural and industrial activities.

With funding from the Ministry for the Environment (through Environment Southland), seven farmers carried out work across seven sites to make a real, cumulative impact in reducing sediment loss.

Buckingham | Project Stats



Project period	Feb - June 2025
Budget	\$6,975
Farmer 'in-kind' contribution	\$11,450
Fencing	180m
Plants	700
Wetland areas	1
Area retired	5116m2

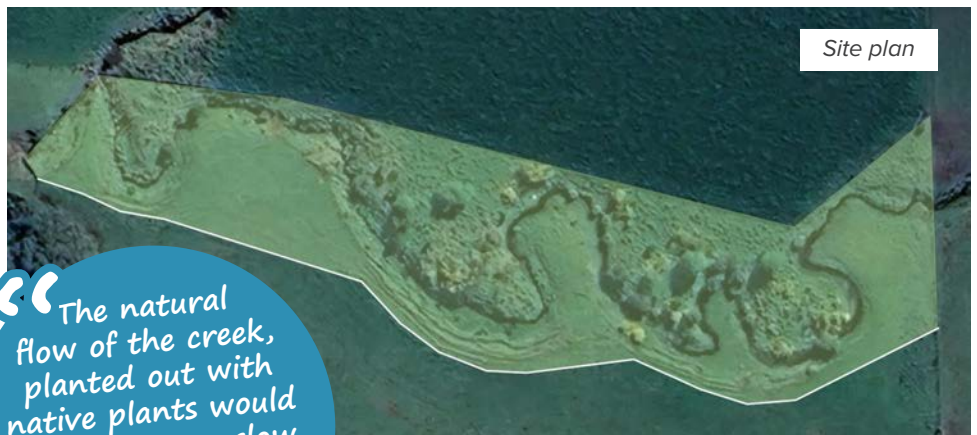
SLOW THE FLOW / EROSION MITIGATION PROJECT - CASE STUDY

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.

He worked with Craig Simpson from Watershed Solutions to create a site plan that balanced practical farming needs with environmental goals. It was crucial that the design met the permitted activity rules for Southland and stayed within budget.

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.

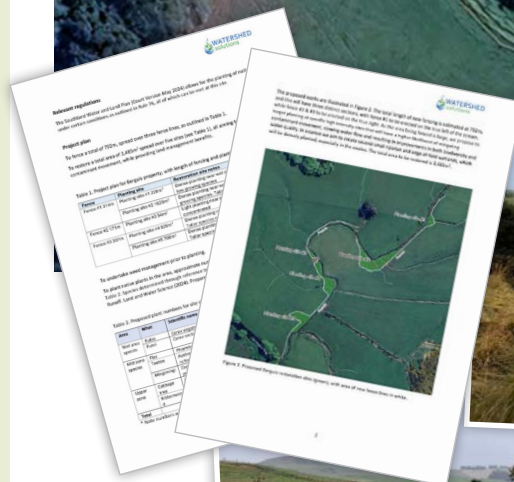


Site plan

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



Before: aerial view of site



Before: area to be fenced



Before: oxbow to plant

What does this work achieve?

Fencing the waterway to exclude stock

- Reduced bank erosion without stock access
- Reduced soil disturbance in low lying swales

Planting

- Stabilising eroding banks through vegetative planting
- Sediment capture
- Slowed water movement to reduce erosion further downstream
- Increased biodiversity
- Increased habitat for aquatic and bird life
- Aesthetically beautiful
- Strategic planting in swales and areas where water is likely to accumulate, to intercept runoff and help mitigate contaminant loss

Riparian margins

- Slow water movement and create ponding in riparian margins, allowing sediment to fall out of suspension instead of entering the waterway
- Water ponding onto planted margins creates a wetland environment, supporting further contaminant removal
- Riparian planting is known to slow water velocity
- Riparian planting aids in providing shade and shelter for stock



During: posts for new fenceline



During: planting day

After



Ministry for the
Environment
Manatū Mō Te Taiao

Essential Freshwater Fund



environment
SOUTHLAND
REGIONAL COUNCIL
Te Taiao Tonga



THRIVING
SOUTHLAND
Tōtahi ana te whenua. Tōtahi ana te takatā.
A thriving, prosperous land. A thriving, prosperous people.

