



## Part 1: Investigations and planning



# LIVING STREAMS Handbook

# Living Streams

Community involvement in  
improving the health of  
Canterbury waterways

## What is Living Streams?

Living Streams is an Environment Canterbury programme designed to improve practices that have an impact on water quality and maintain the health of waterways.

The programme is based on building working partnerships with the community and involves identifying issues, collating local knowledge and developing practical steps to improve the health of our waterways.

Through the programme, individuals and groups are eligible for help and support to restore their streams, including:

- ▶ An assessment of the current stream health
- ▶ Advice on actions and plans to improve stream health
- ▶ Advice on funding and assistance with resource consents if necessary
- ▶ Encouragement and facilitation of wider community involvement in projects.

Although not everyone can be part of the formal Living Streams programme, Environment Canterbury's Resource Care staff will assist landowners with any projects relating to sustainable land and stream management.

This handbook was created as part of the Living Streams programme to help you to restore the streams you care about. The practical tips listed are from people experienced in stream restoration, such as landscape architects, nursery owners and community group leaders. As with all the best advice, it has been gained through practical experience.

The team at Environment Canterbury wish you the best of success for your project.

**Stream definition:** In this handbook we have included all of the smaller waterways under the term 'stream'. This includes farm drains.





# If you read nothing else.....

Fence/keep stock out of streams and avoid cultivation to the stream edge.



Leave a long grass buffer between the stream and fence to filter out contaminants.



Fence and plant riparian margin.



Protect wetlands and springs.



# LIVING STREAMS Handbook

# CONTENTS

## Part 1: Investigations and planning

### **Why bother with the stream margins?** 5

Case study: Ellesmere Stream sparkles

Case study: Kids muck in at Wrights Stream

### **Investigating a Living Streams project** 9

Talk with your neighbours

Get to know your stream

### **Planning a Living Streams project** 12

Making a project plan

Seek advice on resource consents for your design

### **Appendix** 21

Funding

Acknowledgements

References

The following sections are supplied separately and available from Environment Canterbury:

## Part 2: Improving the stream environment

## Part 3: Planting and maintenance



**Why bother with  
the stream margins?**



## Case Study: Ellesmere stream sparkles



### Riparian Margins

The land immediately next to a stream is called the riparian margin. It is important that we look after these areas as they hold the secret to cool, clear, life sustaining water.

Healthy riparian margins help to:

- ▶ Improve water quality
- ▶ Reduce bank erosion
- ▶ Improve the habitat for aquatic life
- ▶ Reduce the need for drain clearing
- ▶ Bring back the birds and other wildlife.

Read on to learn how you can look after your riparian margins.



Photo: Gurnar Lundahl

Landowner Phil Garret

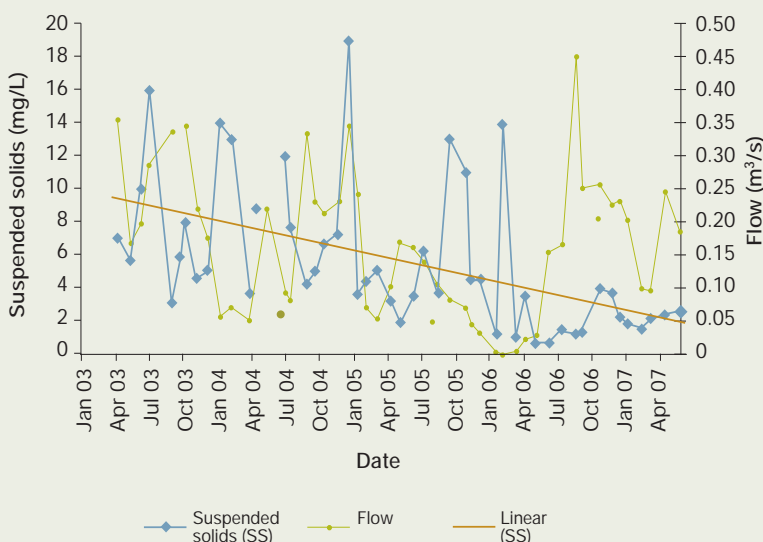
LANDOWNERS HAVE TRANSFORMED **BOGGY CREEK**, near Lake Ellesmere, into a thriving, clear flowing stream. It is a far cry from the days when the stream lived up to its name. Then, it was permanently dirty because of stock continually entering the stream to drink.

The transformation has been wrought by landowners in the Boggy Creek stream care group who have, since 2003, carried out fencing and planting with financial assistance from Environment Canterbury's Environment Enhancement Fund. Others have installed stock water schemes, bridges, culverts and fences at their own cost.

Boggy creek, which flows into Lake Ellesmere/ Te Waihora, is one of only a few streams that flow into the lake to show an increase in the number of trout spawning sites, according to an Environment Canterbury study.

*"The creek now flows clear most of the time"*

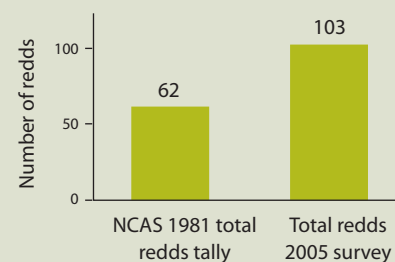
**Reduction in suspended soils in Boggy creek**



Before the Boggy Creek Streamcare Group started fencing and planting work, the stream was dirty most of the time. Suspended solid (SS) measurements showed on average there was 10mg of sediment per litre of water.

After five years of enhancement work sediment levels have been steadily reduced to just 2mg/litre, and the stream is now clear most of the time.

**Redd\* counts in Boggy Creek**



\* A redd is the gravel nest of salmonid fishes

The improvement to Boggy Creek is due largely to the work of farmers such as Phil Garret. Phil has fenced off the stream to keep out cattle and cleared gorse, willow, and pampas grass, replacing these with natives such as the sedge *Carex secta*, which had previously disappeared from the stream banks due to stock grazing.

Environment Canterbury's water monitoring reveals his improvements have not only improved trout spawning but also reduced the stream's sediment levels.

Phil says the stream is unrecognisable from five years ago. "The creek now flows clear most of the time," he says. "The native plants are providing shade and reducing water weed growth. We probably won't need to get diggers in again to clear out the water weeds."

Mark Taylor





## Case Study: Kids muck in at Wrights Stream

WHEN YOU WALK ALONG THE BEAUTIFULLY ENHANCED STREAM that runs along the Adams' boundary you would not think it was planned and planted by a bunch of children! Pupils at Springston School originally visited the stream to measure the water quality, looking for insects that were indicators of stream health. This study evolved into a restoration project in which the pupils worked out the finances, landscaping and plant selection. Over two weeks the kids planted around 1,200 plants.



"It was a wonderful project", says Carol Adams. "The kids really looked forward to coming over to do the planting."

Three years on, the stream is popular with her boys for eeling and canoeing. In spite of their earlier enthusiasm in their planting project, Carol was not surprised when her two teenage boys were less excited about the weeding. Luckily her husband Johnny is very protective of the plantings, regularly checking for new infestations of weeds and making sure the electric fence is operational.





# Investigating a Living Streams project



Aerial photographs are available on the Environment Canterbury website [www.ecan.govt.nz](http://www.ecan.govt.nz). Alternatively district councils or private GIS mapping companies can provide you with more up-to-date pictures.



## Talk to your neighbours

Projects are easier when many hands are involved. Talk to your neighbours, friends and community members to find out if they share your interest in restoring your stream. Groups of landholders working together are particularly effective.



## Get to know your stream

Gather information on the stream. Talk to people who live next to it, and recreate in it. Contact agencies such as Environment Canterbury and Fish and Game.

## Find out if the stream is in a river rating district

These areas have special management plans aimed at reducing the risk of flooding. If your stream is in one of these districts you will need to consider this in your planning, such as leaving access for diggers or making sure your plantings do not reduce the stream's ability to carry flood water.

Contact Customer Services at Environment Canterbury to find out if you are in a river rating district and get advice. Phone 0800 324 636.

## Stream walk

Walk along the stream and look for what is good and what needs improvement. The photographs on the next

few pages will help you identify whether your waterway is healthy. If your waterway looks mostly like the photos in the left hand columns, it is probably in good shape. If your waterway looks more like the photos in the right hand columns, stream life may be suffering and water quality is likely to be poor.

Gaining access to properties is the key to the stream walk. If good relations with landholders have already been established, access is unlikely to be refused. Do not enter anyone's property without first having obtained permission.

Take photographs of the upstream and downstream views of the stream. This will be used for future comparison. Choose views that will not be grown out by future planting and mark the spot with a stake.

For consistency it is best if just one or two people to do stream assessment.

You can contact an Environment Canterbury Resource Care staff member for more guidance on how to do a stream walk.



## Check the water quality

During your stream walk you may have noticed some indicators of the state of the water quality, such as thick algal growth or dirty water, which can indicate poor water quality. If you are interested in more in-depth information, call Environment Canterbury. We can give advice on how to sample the water quality and let you know of any existing water quality data on your stream.

Contact Environment Canterbury's customer services on 0800 324 636.



Is my waterway healthy?



Clean vegetation and gravels.



Sediment and algae (slime) clogging stream habitat.



Good mixed habitat for stream life.



Sediment has smothered all life. Sediment can come from: stock breaking down banks, drain clearing, bank erosion or cultivated soil washing or blowing into the waterway.



Fenced stream with good buffers and shade.



Stock access destroying the qualities of the stream.



## Fencing and buffers



Well fenced and buffered stream.  
Long grass filters out contaminants from run-off.



Cultivation/cropping too close to the stream  
- depositing soil/sediment into the stream.



Temporary fence is fine; grass provides a good buffer.



Stock damage to unprotected banks generates sediment.  
No habitat for birds or stream life.



Narrow buffer with two hot wires is fine on well drained flat land.  
Large areas of land need not be lost to production.



Bare soil is prone to erosion and allows all contaminants  
to flow directly into the stream.



# Stream and drain management



Establishing shade trees will restrict weed growth, reducing the need to clean the waterway.



Excessive cleaning can disturb sediment and destroy stream life and bank habitat. You can minimise impact by taking care when cleaning, and avoiding spawning time.



Fencing stops stock breaking down banks. Fewer nutrients will enter the stream and shade provided by the hedge restricts weed growth.



Unfenced drains feed sediment, bacteria and nutrients into streams.



Good buffers mean fewer nutrients and less weed.



Your sediment becomes somebody else's problem.



## Stock crossings



Culverts keep stock out of the stream.



Crossings damage banks.  
They are a source of sediment and contaminants.



Bridges are the best way to get stock over streams. Bridges are friendly to stream life and are less restrictive in floods.



Even controlled crossings are a source of sediment and faecal matter (nutrient and harmful bacteria) problems.



The nib wall on bridge (raised edges) prevents effluent washing into the stream, aided by grass berms filtering the same discharge.



Another sediment and contaminant source.



# Reticulated stock water





## Stream bank management



Long grass filters out contaminants from run-off.



Irrigation and paddock run-off takes contaminants straight into the stream.



Light sheep grazing can be acceptable management.



Stream fencing should include low spots and wetlands.



With appropriate management, fencing isn't always necessary.



Track run-off entering stream and stock damaging stream bed and banks.





# Planning a Living Streams project

# Making a project plan

The key to a successful project is careful and thorough planning. This section will guide you through the planning process.

## Step 1: Record the current state of the stream

Collate the information from your stream walk, water sampling and other investigations. Refer to pages 10-17.

## Step 2: Decide what you want your stream to be like

These are your project goals.

### Examples:

- ▶ Clear flowing water
- ▶ Water that is safe to recreate in
- ▶ A stream you can fish in
- ▶ Stable banks
- ▶ Less money spent on drain clearance.

## Step 4: Plan actions

Start with your goals and work backwards to identify the actions that you need to reach the goals. It may be that many goals have the same actions.

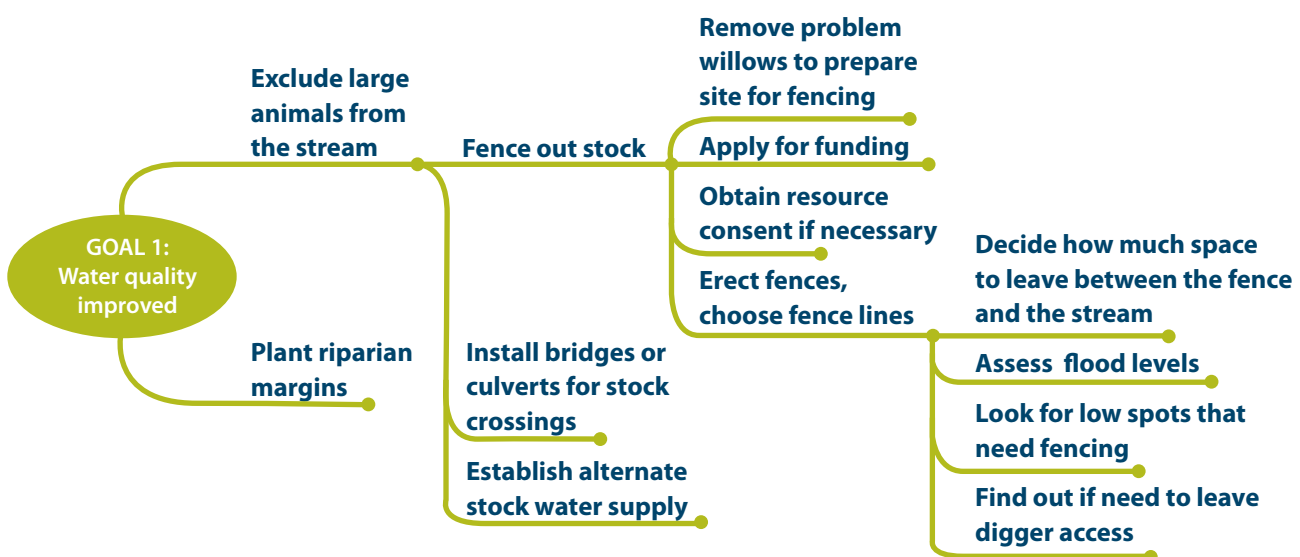
## Step 5: Prioritise

Some actions will be a priority because they are the ones that will have the biggest contribution to achieving your goals. Others will be a priority because they need to be done in advance of others, such as:

- ▶ Engaging the community
- ▶ Applying for funding
- ▶ Applying for resource consent
- ▶ Ordering plants from a nursery
- ▶ Removing willows prior to fencing.

## Step 3: Scan this document

If you have not already, flick through this document in order to understand the general concepts and the actions that will be necessary to achieve your goals.



An example of how you could create a plan.

# Seek advice on resource consents for your project

Some activities require resource consent, others are permitted activities providing you meet certain rules. As the rules can be complicated and change over time, it is usually easier to contact Environment Canterbury staff for a discussion on what is permitted.

## Do I need a resource consent to fence or plant next to the stream?

Under the Canterbury Transitional Regional Plan, resource consent is required for fencing and plantings within seven metres of a stream. The purpose of this rule is to maintain the flood carrying capacity of the stream and to maintain access for drain cleaning purposes. Under the proposed Natural Resources Regional Plan (NRRP) these activities would be permitted provided that all the conditions associated with the permitted activity rules are met.

If you have any questions about whether you need a consent, or if you believe that the adverse effects of the activity are minimal, contact Environment Canterbury's customer services team to discuss the matter.



## Global consent for planting and fencing

If you receive funding through Environment Canterbury's Environment Enhancement Fund, you will be covered by a global consent for the fencing and planting. Refer to funding section on page 21.

## Other activities

You may require resource consent when you:

- ▶ Clear willows from the stream, where you are likely to disturb the bed of the stream
- ▶ Re-shape the banks of a stream
- ▶ Install a bridge or a culvert
- ▶ Change the course of the stream
- ▶ Spray herbicide into the stream to kill aquatic weeds
- ▶ Create a lake or pond.

## Resource consent contact information

Contact Environment Canterbury's Customer Services section by email: [ecinfo@ecan.govt.nz](mailto:ecinfo@ecan.govt.nz), or phone: 03 353 9007 (Christchurch) or 03 684 0500 (Timaru) or toll free on 0800 324 636 during business hours.



# Appendix

## Funding



## Environment Enhancement Fund (EEF) and Honda TreeFund

Environment Canterbury has a contestable fund that can assist with individual or group project costs within the Canterbury region.

The fund is operated annually to encourage a range of biodiversity initiatives on private land.

Projects funded in the past have included fencing streams and riparian enhancement and planting. Grants up to a maximum of \$5000 per property are available, with financial assistance normally covering 50% of the plant and fencing material costs.

### Criteria for EEF funding

**Land ownership:** Projects should generally be on private, customary or coastal land.

**Project ownership:** Group projects need identified leadership.

**Geographic spread:** The aim is to ensure a fair distribution of projects across the Canterbury region.

**Representativeness:** The extent to which an area represents a habitat type or ecosystem that is typical of the area concerned.

**Ecological context:** Projects must provide a benefit to indigenous biodiversity and play an important role in the health of the wider ecosystem over the long term.

### Criteria for Honda TreeFund

To qualify, projects must use New Zealand native trees to support any of the following:

- ▶ Establishment of native tree populations
- ▶ Water run off control
- ▶ Erosion control
- ▶ Regional parks or other planting for beautification
- ▶ Biodiversity protection and restoration
- ▶ Urban stream enhancement
- ▶ Coastal protection and restoration planting
- ▶ The Cancer Society SunSmart Schools Accreditation Programme.

### Characteristics of a successful application

Successful applications in previous years have included a wide variety of projects. Some characteristics of these applications you might like to consider when writing your application are:

- ▶ A clear description of the project and the works proposed
- ▶ A well prepared project management plan
- ▶ A realistic timeline over which the project would be complete
- ▶ An outline of the probable maintenance requirements and who would be responsible for these
- ▶ A realistic costing for the project.

### Timeframe

June – EEF and Honda TreeFund opens

End of August – applications to the Fund close.

December – decisions announced and funds made available to successful projects early the following year.

## How do I apply?

Funding applications must be made on the Environment Enhancement Fund form. For more information, or to request an application form, phone (03) 353 9007 or toll free on 0800 324 636. Applications may be downloaded from <http://www.ecan.govt.nz/About+Us/Awards/>



## Other funding opportunities and advice

Below is a list of other funding opportunities for stream restoration projects.

For further information go to the Funding Information Service (FIS) website [www.fis.org.nz](http://www.fis.org.nz)

### Biodiversity Condition Fund

Department of Conservation/ Ministry for the Environment

Phone: 0800 862020

Email: [biofunds@doc.govt.nz](mailto:biofunds@doc.govt.nz)

### The Pacific Development and Conservation Trust

Phone: (04) 495 9387

Email: [trusts@dia.govt.nz](mailto:trusts@dia.govt.nz)

### Habitat Protection Fund

Phone: (04) 499 2930

Email: [info@wwf.org.nz](mailto:info@wwf.org.nz)

### Lottery Grants – Environment and Heritage

Phone: 0800 824 824

Email: [grantsonline@dia.govt.nz](mailto:grantsonline@dia.govt.nz)

### Nature Heritage Fund

Phone: (04) 471 0726

Email: [NHF-Admin@doc.govt.nz](mailto:NHF-Admin@doc.govt.nz)

### Sustainable Management Fund

Phone: (04) 437 7400

Email: [funds@mfe.govt.nz](mailto:funds@mfe.govt.nz)

### BOC Where There's Water Community Environmental Grants

Phone: 0800 111 333

Email: [wtw@nzwwa.org.nz](mailto:wtw@nzwwa.org.nz)

### District councils

Some district councils also have funding available.





# Acknowledgments

Environment Canterbury would like to thank the following people and agencies for supplying material from their publications:

- ▶ Controlling problem weeds in riparian zones, and Restoration Planting: A guide to planning restoration planting projects in the Wellington region.
- ▶ Protecting and restoring our natural heritage: a practical guide. By Mark Davis and Colin Meurk. Published by Department of Conservation, Christchurch, 2001.
- ▶ Environmental considerations for clean streams. Published by the Otago Regional Council, 2005.
- ▶ Wetland restoration guide. Produced from the Bay of Plenty Wetlands forum.

We would also like to thank the following people for providing their tips on restoration and/or reviewing the document:

- ▶ Gunnar Lundaahl, Leeston
- ▶ Jamie McFadden, Hurunui Natives
- ▶ Ines Stager, Lucas Associates
- ▶ Jason Butt, Wai-ora Forest Landscapes Ltd
- ▶ Peter Chamberlain, Waihora Ellesmere Trust
- ▶ Jorge Santos, Department of Conservation
- ▶ Stephen Brailsford, Waihora Ellesmere Trust
- ▶ Anthony Holcroft
- ▶ Carol and Johnny Adams
- ▶ Wayne McCallum, Canterbury Regional Biodiversity Coordinator.

# References

1. *Managing your bush block: A guide to looking after indigenous forest remnants in the Wellington region.* Greater Wellington Regional Council.
2. Davis, M.; and Meurk, C. (2001). *Protecting and restoring our natural heritage: A practical guide.* Department of Conservation

## CONTACT INFORMATION

### **Environment Canterbury Customer Services**

Phone: 03 353 9007

0800 32 46 36

Web: [www.ecan.govt.nz](http://www.ecan.govt.nz)

Email: [ecinfo@ecan.govt.nz](mailto:ecinfo@ecan.govt.nz)

### **Christchurch**

58 Kilmore Street

PO Box 345

Christchurch

Phone: 03 365 3828

Fax: 03 365 3194

### **Timaru**

75 Church Street

PO Box 550

Timaru

Phone: 03 684 0500

Fax: 03 684 0505

E09/014

