Restored drains better every way

The Canterbury Waterway Rehabilitation Experiment (CAREX) conducted by biologists at the University of Canterbury is testing practical tools to address aquatic weeds, sediment and nutrient management issues in lowland Canterbury waterways. The project involves 23 landowners from Rangiora to Lowcliffe and covers nine kilometres of waterways across 14 farms. Postdoctoral fellow Kristy Hogsden outlines some of the research findings.

Before . . . The drain before restoration.

During . . . Rebattering of the drain.

After . . . Carex plantings two years on.

PHOTOS: CANTERBURY WATERWAY REHABILITATION EXPERIMENT.

Fencing and planting alongside drains and waterways are two of the best known and widely promoted ways to improve water quality and protect freshwater life in Canterbury and around New Zealand.

Fencing prevents stock access to drains and riparian plantings help to stabilise banks and lessen inputs of nutrients and sediments.

The plants also provide shade that reduces nuisance weed growth and lowers water temperature. Cooler waters have more dissolved oxygen available to support freshwater life.

A sometimes overlooked issue in managing drains and waterways is steep, highly eroding or slumping banks. These are major sources of sediment that can build up and clog drains, enable growth of nuisance weeds, and reduce habitat for animals and fish living in the drain.

The importance of dealing with these steep or slumping banks before planting has been identified by ongoing research, as part of the Canterbury Waterway Rehabilitation Experiment (CAREX, for short) based at the University of Canterbury.

CAREX is testing practical tools to remedy aquatic weed, sediment, and nutrient management issues in lowland Canterbury and to improve waterway health.

Freshwater biologist on the CAREX team Professor Jon Harding recommends to "get it right the first time" by including bank rebattering in drain restoration and enhancement projects, where needed.

Bank rebattering (also called reshaping) involves earthworks to reduce the slope, which stabilises the banks and removes sources of sediments and improves flood capacity. This may involve moving fences, but not always.

During their work, the CAREX team has found that "not all digger drivers are equal", so it is best to ask around and do your research to get the best possible outcome for your drain and money.

An example of agricultural waterway restoration done right can be seen at Graeme and Gill Harris' farm in the Hinds area.

In 2014, the Harrises partnered with CAREX to develop a restoration plan for their waterway and to trial tools to reduce aquatic weeds and sediment.

With funding from Environment Canterbury's Immediate Steps programme, which aims to improve habitat and increase biodiversity in and around fresh waters, combined with in-kind contributions from the Harrises, a mature pampas hedge was removed and earthworks were done to rebatter the banks. The fencing setbacks were then widened and the banks planted with native sedges, including carex, and shrubs along both sides of the drain.

Rebattering was a key step in this plan and created an ideal environment for planting and establishment of a riparian buffer.

Two years on, sediment levels have been reduced in the drain and the carex plants are already growing to overhang the banks in sections, which is shading out some aquatic weeds.

Graeme and Gill are pleased with how the waterway is looking and working and "have learned quite a bit, too".

★ For more information on the CAREX experiment, go to www.carex.org.nz.

For more information on Immediate Steps, go to http://ecan.govt.nz/advice/biodiversity/funding/pages/immediate-steps