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Case study: Bryce Burnett, deer farmer, North Otago

The value of water is ingrained in Bryce Burnett. His 360-hectare farm in North Otago has around one good year in seven and, leading up to Christmas last year, it looked like this was going to be one of them.

The Kauru River runs through Bryce's property and is home to a nationally critically endangered species of galaxiid. He keeps an eye on the river and says he is conscious of farming responsibly.

"Most farmers are environmentalists on some level," he said. "To me, a good farm isn't just about how good the fences look. It's also about healthy animals and looking after the environment, including water quality."

The North Otago Irrigation Company (NOIC) expansion programme is being rolled out to the Kakanui area, and Bryce is taking

advantage of having a regular water supply to his farm by installing an irrigation system. The extra grass he'll be able to grow means he can increase his stock units by a third.

He's the first in New Zealand to use the TORO irrigation system on this scale. It uses the same technology as irrigation systems for sports fields and golf courses, which is a fixed-grid, pop-up system. It's been around for 80 years and, while the application to farming is relatively new, the technology is proven.

"The appeal for me is that it's an

underground system so it's better for stock management as well as easier on the eye. The equipment can't get knocked over by the wind, and the sprinklers are robust enough that I can drive or mow over them," Bryce said. "It's a big outlay, but the ongoing costs and maintenance should be lower than other irrigation systems."

The shape of the farm ruled out a centre pivot, and Bryce didn't want a spray line due to the high labour cost to run it, as well as having less water efficiency compared with the fixed-grid system.

There will be 720 sprinklers in total across a third of the farm, with five operating at any one time to irrigate 4mm/ha/day over 20 hours.

The system set-up was designed and customised for the farm, and each sprinkler has four rotating jets that spray the water with

a rain-like effect, meaning the coverage will be uniform. This is a plus for Bryce, who is conscious of making sure there is no runoff.

"I'll be checking the soil moisture levels frequently to make sure I only irrigate when I need to, and so I know how much water to put on," he said. "Like any other irrigation system, it's

only as fool-proof as the person using it.

"I don't intend to have any runoff. I don't want to pollute the Kauru River, and water is too precious to waste."

NOIC reinforces this by requiring its members to monitor their moisture levels as a basis for deciding if irrigation is needed.

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Bryce Burnett beside one of the recently-installed sprinklers.

The system is automated and can be managed by Bryce's phone. Water can be applied at variable rates because the individual sprinklers can be adjusted depending on soil moisture levels in different areas of the farm.

OVERSEER modelling showed that with the irrigation system in place, his nitrogen loss to ground sits at 6kg/N/ha/year, which is well below the Water Plan threshold for the Kakanui catchment, which comes into effect on 1 April 2020.

Farming in North Otago has given Bryce a strong appreciation for the value of water – not only in protecting the water quality in the river on his property and making sure it's healthy for the fish and other stream life that live there, but also just how scarce this resource can be.



The sprinklers waiting to be installed.



There are 35 sprinklers in this paddock.

Working in waterways – what do you need to know?

Smaller waterways such as tributaries often have more freshwater organisms living in them than larger waterways, in both number and diversity. This makes it important to reduce any impact on aquatic life if you're working in rivers and streams.

HOW CAN WORKING IN WATERWAYS AFFECT WATER QUALITY?

Disturbing or modifying the bed or banks of a waterway can:

- Cause sediment to enter the waterway, which can block light and stop plants from growing, smother fish habitats, and block fish gills
- Change the natural flow of a waterway, which can effect flood flows
- Erode the waterway
- Damage vegetation.

WHAT WORK AM I ALLOWED TO DO?

Some work in waterways is permitted, so long as certain conditions are met. This means you don't need a resource consent from ORC to do them. This work includes:

- Installing some bridges or culverts
- Repairing a water intake
- Maintaining structural repairs, such as removing flood debris or reinstating a bank that was damaged in a recent flood event (so long as you use the same materials the existing bank is made from)
- Removing debris and sediment immediately surrounding a culvert
- Installing ponds for stock water.

To make sure what you plan to do is permitted, check out the Water Plan or contact a resource consent officer at ORC on 0800 474 082.



Always make sure there is adequate mitigation in place where there is disturbed/exposed ground.

WHAT WORK DO I NEED A RESOURCE CONSENT FOR?

- Realigning and straightening sections of waterways (including creeks and streams)
- Removal of sediment from the bed (including banks) of waterways
- Tiling a stream
- Disturbing a river bed while removing logging slash (or sediment)
- Installing some culverts and crossings.

WHO IS RESPONSIBLE FOR FOLLOWING THE RULES?

Everyone has a responsibility to make sure the work is being carried out in a way that protects the environment; that's why the rules are in place. This includes the landowner and/or manager, the contracting firm, and the digger driver.

WHAT ELSE DO I NEED TO BE AWARE OF?

There are specific rules for:

- Drainage work in regionally significant wetlands
- Gravel extraction
- Work within an ORC flood protection scheme.

What you can and cannot do in waterways is simplified in this article, but it should give you a good starting point. Be aware there

are catchment-size and time constraints for carrying out work, and sometimes you may need to get permission from environmental protection groups.

If you do need consent, make sure you allow time to prepare your application and have it processed before you scratch the land. Processing can take up to 20 working days providing all the information is available.

Make sure you know and are following the conditions of each permitted activity rule, or whether you'll need a resource consent before you start any work. If you're unsure or have any queries give us a call on 0800 474 082. You can also find out more information at orc.govt.nz.



Make sure you apply for resource consent before cleaning sediment from the bed of a waterway.

Winter feeding

Winter feed crops such as fodder beet will be growing well by now, so it's time to start thinking about the best way for animals to graze them over the coming months without your precious soils being washed away.

There are a number of steps you can take to lessen the likelihood of your soil being washed into a waterway during rain events:

1. Create a buffer strip of long grass or low vegetation (i.e. riparian planting) between grazing paddocks and waterways, and also in gullies/swales where water might naturally collect to flow into a waterway.
2. Create a sediment trap, such as a pit or perpendicular channel at the bottom of the paddock, to slow water movement.
3. Graze stock in the lower, damper areas of paddocks last, to reduce sediment runoff from these areas.
4. Strip-graze across a paddock instead of down the hill to allow sediment to get trapped by lower-lying crops and prevent it entering waterways.
5. Think about access (gateways, lanes, culverts and crossings). These often get more traffic than usual and it's important that there are adequate measures in place to prevent any runoff to water with the associated high use.

ORC did an aerial survey of South Otago late last year and we were pleased to see the high number of farms using the winter feeding good practices listed above, and the number that had improved their sediment management practices compared with previous years.

There will always be room for improvement, so spread the word and tap your neighbour on the shoulder to share your good practice tips.



Poor practice: The access way has pugging, with runoff into the stream.

IN BRIEF



ORC ONLINE

Have you liked the Good Water in Otago – ORC Facebook page yet? Make sure you do, and email us at water@orc.govt.nz to sign up for On-Stream, our monthly e-newsletter.



DEEMED PERMIT FORUM

If you want to find out how to replace your expiring deemed permit with a water permit, come to our forum in Alexandra on Wednesday 29 March from 9.30am to 3.00pm at the Cellar Door Function Centre.

MANUHERIKIA MINIMUM FLOW CONSULTATION

We will be reporting back in late March on the minimum flow options for the Manuherikia, including a science report on the ecological values in the catchment and the flows required to maintain these. Public drop-in sessions will be held at the Oturehua Hall on Tuesday 21 March, in the Omakau Community Centre on Wednesday 22 March, and at the Cellar Door in Alexandra on Thursday 23 March. Drop in any time between 1.00pm to 3.00pm or 6.30pm to 8.00pm on a day that suits you.

Fish and flow web portal

Many of Otago's irrigators use deemed permits, based on historic gold mining rights, to take water from races, dams, creeks, and channels derived from water races dug by the original miners.

If you have a deemed permit (mining privilege) that you use to access irrigation water, you must reapply for a new water permit before they expire in 2021. However, to ensure that your access to water continues we recommend that you get your application in by November 2020 at the latest.

Before sending your application to us, there is a lot you can do to ensure the process is as smooth and quick as possible. By providing all the supporting information you can, it will be easier for our consents team to process your application without lots of delays and additional costs.

To help, we have developed a web portal so you can easily access the information ORC has.

This free tool assists you by providing some of the information you need to prepare your water permit application.

This portal (www.orc.govt.nz/fishandflowportal) provides information on water takes in your area, local resource consents, and information that we hold on local aquatic life, including fish.

Although it may not provide everything you need for your consent application, it is a good starting point to understand what's already known about your area and covers things like water temperature, surface water level, water take and rain gauge locations.

The information on the website will assist with two key steps in the resource consent application process: collecting supporting information; and providing an assessment of environmental effects (AEE). Please note that not all layers may have information to display for your search area.

Would you like more advice on how to complete your application? It's often good to talk to the experts – you can contact us on 0800 474 082 between 8am–5pm, Monday to Friday, or email us at public.enquiries@orc.govt.nz



ORC hosts students at Water Wise

Water Wise is a youth leadership programme that involves secondary and tertiary students from Otago spending a week undertaking experience-based learning for sustainable development.

This is the second time ORC has been involved, and feedback showed the students benefited from their time with us to learn about the water in the Cardrona catchment, from the ski field to the rivers and lakes. They also valued hearing about the wide variety of career opportunities available within a regional council.

The students helped us with some field work by doing a survey on the Cardrona River and assessing riparian and in-stream habitat quality, as well as looking at sediment and algal cover along the river.

This will provide ORC with details on the health of the river habitat and pressures placed on the river from surrounding land use and land management practices.



Students observe ORC staff Jono Young and Pete Ravenscroft electric fishing in the Cardrona River.