



Teed up for irrigation

Bryce Burnett, a North Otago deer farmer, grew up on the land he now farms, and the value of water is ingrained in him. His 360-hectare farm in North Otago has roughly one good year in seven, and leading up to the end of 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 the only known population of lowland longjaw galaxias, which is listed as 'nationally critical', the highest classification under the New Zealand threat classification system.

Bryce keeps an eye on the river and says he is conscious of farming responsibly. He does his best to look after the land so it's in a good state for the next person who farms it.

"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 property 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 only recently applied to farming.

"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 systems."

There will be 720 sprinklers in total across a third of the farm, with five operating at any one time. The system set-up was designed and



Ready for underground installation, the sprinkler system is similar to that used for sports fields and golf courses

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.”

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 on different areas of the farm. OVERSEER modelling showed that with the irrigation system in place, his N loss is estimated at 6kg/N/ha/year.

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 that live there, but also just how scarce this resource can be.

New web portal launched

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 miners.

If you have a deemed permit, or mining privilege, which you use to access 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 you submit your application there is a lot you can do to make sure that the process is as smooth and seamless as possible. One of the most important things that you can do to assist your application is to provide all the supporting information that you can to make it easier for our consents team to review it.

ORC has developed a web portal to help those changing from deemed permit to a consent

to take water to access the information freely available to assist with their application.

This portal provides information on water takes in your area, resource consents held, along with local rivers and streams, and information that we hold on important fish species in the area.

It may not provide all the information you need and you may need to collect more data, but it is a good starting point to help understand what’s already known about your area.

You have the option of a more advanced search using the mapping tool. This tool offers the choice of 18 layers, including water temperature, surface water level, water take and rain gauge locations. Please note that not all layers may have information to display for your search area.

The information provided in the web portal will assist with two key steps in the resource



consent application process: collecting supporting information, and providing an assessment of environmental effects (AEE).

Would you like to have 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 and 5pm Monday to Friday. Or email your questions to: public.enquiries@orc.govt.nz

Check out the portal: www.orc.govt.nz/fishandflowportal

ORC facilitating meetings with affected parties

With deemed permits due to expire throughout Otago in 2021, those looking to replace their permits will most likely need to seek the written approval of potentially affected parties before lodging their application.

The Resource Management Act requires all applicants to consult with any potentially affected parties before lodging a consent application. Affected parties commonly include the Department of Conservation (DoC), Fish and Game New Zealand, public health services, New Zealand Historic Places Trust, city and district councils, and iwi.

ORC liaison specialist Bruce Monaghan has been facilitating a series of meetings between water user groups and potentially affected parties in Central Otago (where many of the deemed permits exist). These meetings help water users to understand why these parties are potentially affected, and the values they are trying to protect.

"Understanding what these groups value will help in the preparation of your application, seeking and obtaining written approval, and help create a smoother water permit replacement process," explains Bruce.



Profile on Kāi Tahu values

Iwi is potentially affected by the replacement of permits. This issue of Waterlines takes a closer look at the values iwi seek to protect.

Tim Vial

KTKO was formed in 1997 as an iwi consultation service to advocate for Kāi Tahu environmental and cultural aspirations in resource management, and to support Māori health and well-being in Otago. KTKO works closely with Te Ao Marama Incorporated, which represents the Southland Kāi Tahu Papatipu Rūnanga in areas of shared interest.

Tim said that Kāi Tahu do not see their existence as separate from Te Ao Tūroa (the natural world), but as an integral part of it. "Our natural environment – whenua (land), water, coasts, oceans, flora and fauna, and how we engage with it, is crucial to our identity, our sense of unique culture and our ongoing ability to keep mātauranga Māori (customary knowledge), and mahika kai practices alive," Tim said.

Mahika kai is an all-encompassing term that literally means "food workings" and refers to food

gathering or sources of food, but also embodies the traditions, customs and collection methods.

Mahika kai practices are central to Kāi Tahu culture, as much of the environmental knowledge that has been built up centres on food gathering. High water quality and water quantity are fundamental to maintaining mahika kai.

In assessing the health of rivers, lakes and springs the following attributes are important for Kāi Tahu:

- aesthetic qualities e.g. clarity, natural character
- the presence of indigenous flora and fisheries
- life-supporting capacity and ecosystem robustness
- depth and velocity of flow
- continuity of flow from the mountain source of a river to the sea (ki uta ki tai); and

- fitness for cultural use (including mahika kai).

When assessing whether to provide written approval for a resource consent application Tim's team consults with the Kāi Tahu Papatipu Rūnanga, who will give a direction on how to respond. Areas that are often of special interest to Kāi Tahu include:

- any activity near the coast
- any surface water activity
- the disposal of effluent
- any activity that results in the removal of indigenous vegetation.

Understanding the values parties like iwi seek to protect will help you prepare a consent application. It also typically makes it more straightforward to gain written approval from affected parties.



Water of Leith, Dunedin

Workshop to set groundwork for new urban water quality strategy

We'd all like to have good water quality in Otago's coast, lakes and rivers. With this in mind ORC is further developing the water quality strategy to help maintain and improve local water quality.

The strategy will build on the improvements sought in rural water quality, by working towards a similar outcome for urban discharges.

It will set out the overall framework for how water is managed in Otago. It will form the basis for changes to the Water Plan to address wastewater, stormwater and sewerage discharges.

In late April we'll be holding a water quality strategic workshop with representatives from groups including local councils, Federated Farmers, Public Health

South, iwi, the Department of Conservation, and Fish and Game. The workshop will draw upon this combined group for help to refine how the strategy could work.

The public can have their say on this strategic direction when consultation for any plan changes occur later in the year.

Review environmental effects when applying for resource consent

Applying for a resource consent is something that many property owners must do in order to make improvements to their operations.

When you apply for resource consent, an Assessment of Environmental Effects (AEE) is required so that you and others can understand what may happen to the environment when you undertake your proposed activity.

What is an effect?

In simple terms, an effect is the result from an activity. For example, diverting a stream could cause the following effects:

- Impacts on downstream property owners and riparian rights
- Impacts on traditional food gathering by local iwi
- Changes in vegetation next to the stream
- Loss of spawning habitat for fish
- Flooding or erosion to stream banks.

The AEE helps ORC to determine if the effects of your proposed activity are minor or more significant, and whether your application should proceed as non-notified (not needing public notification or consultation), limited notification (advising affected parties) or fully notified (which

may require a hearing and public submission process).

When preparing an AEE you should consider:

- Any effects on those in the neighbourhood
- Physical effects on the locality
- Effects on ecosystems
- Effects on natural resources
- Discharge of contaminants
- Risks to the neighbourhood
- Layout and format (the format of an AEE should be simple to follow. You should use consistent headings and provide a summary).



Hamish Anderson and assistant Sarah Piwari with water samples ready to go to the laboratory.

Clutha Development: helping farmers

Clutha Development was set up in 2013 to promote economic development within the Clutha district. This includes supporting and encouraging opportunities that will promote sustainable growth and a vibrant business environment in the area.

Clutha Development is helping farmers in the Clutha district meet the Water Plan rules through field days, meetings, and administering a water sampling programme. Members are encouraged by project manager Hamish Anderson to do regular water testing to inform themselves on the water quality around their property, with the goal of making sure any discharges from their property are compliant with Water Plan nutrient and *E. coli* thresholds.

Some members recently learned about what work they can do in waterways and when a consent may be needed, at four workshops held around the Clutha district. ORC liaison specialist Nicole Foote and consent team staff were pleased to talk about the consent process, and explained it's not as scary as some people think. If you think you might need a consent and don't know where to start, call our consents public enquiries team on 0800 474 082.

Clutha Development is also assisting a group of Lawrence residents to do a feasibility study into establishing a wetland in the area. This will create a habitat for the endangered Clutha Flathead Galaxiid, as well as have environmental benefits and be a valuable educational resource.

Minimum flow science study on Clutha River

We're gathering information about flow levels and values in the Clutha, to help determine what minimum flows should be recommended for the Clutha River.

Our science team is doing a study on the river between Lake Wanaka and Lake Dunstan. This stretch of the river is a nationally-significant trout fishery.

We are currently gathering data about flow levels and values in the Clutha so our policy team has all the details they need to recommend a minimum flow for the Clutha catchment.

The traditional approach to looking at river values involves modelling the river, and how changing the flow levels in certain areas would affect the river in terms of form, characteristics, and habitat for fish and other aquatic wildlife.

For the Upper Clutha, we are trialling a more sophisticated

approach, bioenergetics, which is the best method to use when there is a high number of trout in the river.

Bioenergetics takes into account food availability for the trout at different flow levels. Trout are the most demanding fish on the river in terms of resources, so if the river flows can sustain the trout at a desired population, they will also support the other river values.

We will begin consulting on a minimum flow for the Upper Clutha later in the year.



ORC staff Jono Young and Pete Ravenscroft demonstrate electric fishing in the Cardrona River

Students get Water Wise

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

We have now been involved with Water Wise twice, 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 with 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 us with details on the health of the river habitat and pressures placed on the river from surrounding land use and land management practices.



ORC staff are responsible for their own health and safety

We're healthy and safe at ORC

ORC environmental monitoring staff are responsible for making sure environmental regulations are being followed, for the good of the environment as well as the wider community.

Part of this involves property inspections. Under the new Health and Safety Work Act 2015 (HSWA) they are responsible for their own health and safety if they are on your property, and they all have the right training and safety gear to keep themselves safe.

The HSWA doesn't prevent our warranted ORC staff from going onto your land. Being warranted means they are legally allowed to enter your property under the Resource Management Act, and is also why health and safety is their own responsibility.

They will ask you if there are any risks they need to know about, so thanks for your cooperation in helping them do their jobs safely.

A day in the life of...



In this issue we profile environmental officer **Matt Cunningham**, who is part of the hydro team that monitors our waterways. **Lisa Minhinnick** rode shotgun as he collected water samples from South Otago rivers.

Rain, hail or snow, the ORC hydro team is out and about. Personally I was hoping for sunshine but it wasn't to be, so with gumboots and a raincoat on, I hopped into the equipment-filled ute with Matt and we headed south. The numerous chilly bins in the back were to keep the samples cool, so any hopes they were filled with a picnic lunch were quickly squashed.



Water testing - Waikoikoi River at Hailes Bridge

The hydro team is hands-on, gathering data about Otago's lakes and rivers to measure water levels and test the water quality. Today's task was to measure river levels and take water samples for ORC's State of Environment (SOE) testing, which involves monthly testing of sites and analysing trends over time to see if water quality is increasing or degrading.

We had five sites to test, and three of these also involved a check that the telemetry (remote electronic recording) measurements match up with the manual recording for ORC's live flow information:

www.orc.govt.nz/Waterinfo. This included looking at river gauges, which are the big rulers you often see sticking out of rivers to measure the height of the flow, as well as more elaborate devices.

Matt usually gets into the rivers and uses some of the equipment in the back of the ute to gauge the flows, but the rain meant the river levels were too high, and he wisely chose to avoid being swept away to Balclutha.

I was surprised by the level of care taken in collecting water samples correctly. Sterile sample bottles are rinsed three times in the river water before samples are taken, a chilly bin is on hand to keep the samples cool, and accurate details are kept in duplicate about the location and time, both in paperwork and on bottle labels.

Matt couldn't resist playing a trick on this urban novice, but thankfully it wasn't squirting me with water (I was wet enough, thanks to the rain).

One sample involves pushing the water through a filter on the end of a syringe so any sediment is removed, and he asked me to do this for him. I was half way through when it got stuck and, try as I might, I couldn't push any more. Accepting defeat, I handed it back to Matt, who chuckled and changed the filter, meaning the rest of the syringe could be emptied easily. Nice one, Matt!

Matt loves his job, and feels privileged to see many beautiful parts of Otago while carrying out his work. I only got to see a small part of what the hydro team



does, but the work they do is invaluable to provide live water information for Otago residents, maintain equipment, and test water quality so we know the health of our waterways.

Some sunshine would have been nice though.

DO YOU LIKE GOOD WATER IN OTAGO?

Find us on 

We have a new Facebook page for water quality and quantity, so make sure you 'like' 'Good Water in Otago – ORC' to get regular updates on the great things farmers and other landusers in Otago are doing to look after our precious waterways. We've also launched a monthly e-newsletter called *On-stream*; email us at water@orc.govt.nz to subscribe.

In Brief

Velvetleaf

This pest plant caused biosecurity problems last summer after being discovered in fodder beet seed. Our staff and community volunteers destroyed around 200 plants from over 50 properties in Otago, after inspecting several hundred.

Please keep a close eye out for velvetleaf this summer, because the seed can stay active in the soil for up to 60 years. If you spot velvetleaf, report it to us on 0800 474 082.

Queenstown school restoring wetland

Shotover Primary School, along with help from the Wakatipu Reforestation Trust and the community, are restoring a wetland at the convergence of the Kawarau and Shotover rivers.

Students, led by teacher Jill Hodgson, have formed the Shotover Wetland Squad and are learning about caring for the environment.



A successful planting day by Shotover Primary School

Board of Trustee members Shayne Galloway and Sarah Jones, along with Queenstown developer Grant Stalker, are also involved with the project.

ORC environmental officer Richard Heyward joined in a planting day with the school and local preschool, and will continue to be involved with the project.

EVENTS CALENDAR

FEBRUARY

Flow requirements for water takes

We are reviewing flow requirements on water takes and want to hear your views:

Wednesday 22 – Cromwell Sports Club

Thursday 23 – Arrowtown Bowling Club

Friday 24 – Balclutha St John rooms

Monday 27 – Dunningham Room
Dunedin Library

All venues **1pm to 3pm** and **6.30pm to 8pm**
(Dunedin Library session ends at 7.30pm).

MARCH

Clydevale farming expo

Come to our stand at the expo and say hi.

1 March – 171 Tuapeka Mouth Road
9am to 4pm.

Manuherikia minimum flow consultations

We will be reporting back on the flow options, including a science report on the ecological values in the catchment and the flows required to maintain these.

Tuesday 21 – Oturehua Hall

Wednesday 22 – Omakau Community Ctr

Thursday 23 – The Cellar Door Alexandra

Come at any time between:

1pm to 3pm or **6.30pm to 8pm.**

Deemed permit forum (Alexandra)

If you want to find out how to replace your deemed permit with a water consent, come to our forum:

Wednesday 29 March – The Cellar Door
9.30am to 4pm.

If you're a deemed permit holder, an invitation to the forum will be posted to you soon.