

WATER EFFICIENCY CASE STUDY: RANGITATA DIVERSION RACE MANAGEMENT LTD (RDRML)

Putting water to work for Mid Canterbury

One of the untold success stories in the irrigation industry is the water efficiencies many irrigation schemes and individual farmers have been able to achieve in the past decade due to technological advances and improvements in irrigation practice on-farm.

Leading this trend is the company behind one of New Zealand's pioneering irrigation canal networks, which now operates as a much broader provider of water services within Ashburton District.

Rangitata Diversion Race Management Ltd (RDRML) sees itself not as an irrigation company, says CEO Ben Curry, but as a water supply company with three very different user groups for the resource.

As well as irrigation water, the company supplies water for hydro generation (TrustPower's Montalto and Highbank power stations) and stock water (Ashburton District Council). The three water uses are complementary as the irrigation season runs from spring to early autumn (10th September to 9th May). Hydro generation then uses the bulk of water during winter (10th May to 9th September) while stock water requirements are a much smaller component of total water used.

In the past decade, RDRML has achieved significant reductions in the water used by its irrigation customers. The company supplies three local irrigation schemes, who are all shareholders in RDRML; Mayfield Hinds (36,000 hectares), Ashburton Lyndhurst (28,000 hectares) and Valetta (11,000 hectares). The total area irrigated is 75,000 hectares, with a further 20,000 hectares consented for growth. In addition, RDRML supplies water for irrigation to the Barrhill Chertsey Irrigation Company that has developed some land adjacent to the RDR canal.

Between the 2000/01 and 2012/13 irrigation season, RDRML saw water use (5 year rolling average) fall by nearly 30% across each of the three schemes. This is despite further intensification of farming and irrigation development in the district.

"It would be fair to say that the annual average rainfall over the past decade has been above the norm, reducing the demand for water for irrigation. However the key component in the reduction of water use has been the conversion from on-farm flood irrigation to spray," says Mr Curry.

The significant water efficiency savings across its irrigation client base has allowed the company to make more water available for other user groups, particularly hydro generation. RDRML still uses all water allocated to it through its resource consent, but has been able to transfer the savings made through more efficient irrigation practice to other customers.

"We still use all the water, just not all the water allocated for irrigation today. However we do need to maintain a minimum level through the network as part of our resource consent conditions," says Mr Curry.

The nearly 30% reduction in water use by its irrigation users can be attributed partly to the move to more highly efficient centre pivot irrigation systems in Mid Canterbury. On-farm practice has also played a role as farmers improve their irrigation application with the aid of new technology and greater awareness of the importance of soil moisture monitoring, irrigation scheduling and system optimisation.

While Mid Canterbury's irrigating farmers deserve applause for their role in achieving this significant water efficiency outcome, Mr Curry is keen to reinforce RDRML and its associated irrigation schemes remain vulnerable to dry periods and drought, as their resource consent to take water from the Rangitata River is subject to restriction when the river is low.

"Our 'Achilles' Heel is that we are a run-of-river scheme. Modern farming businesses, like other businesses, need certainty of supply and RDRML obviously recognises that water is a critical component and is developing plans for storage that will provide the surety that our farmers need."

But it's not just farming that could benefit from storage. "If we get the planning right, we could develop a storage facility with benefits not only for the farming economy, but for the environmental, social and cultural values too".



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About the RDRML

“Putting water to work for Mid Canterbury”

RDR Management is involved in:

- ***Water distribution, compliance monitoring and SCADA systems operation.***
- ***Management of asset, contract supervision, canal surveillance and monitoring.***
- ***Provide environmental investigations and the usage of race for recreational events.***



The Rangitata Diversion Race was a dream in the minds of the pioneering farmers in Mid Canterbury when the 750,000 acre plain was first farmed in the mid-19th Century. Regarded as the largest area of nearly flat land in New Zealand, all development was closely linked to water problems – water races to supply stock on light soils and water courses to drain heavy swamp lands.

Despite high expectations of development, it took the massive unemployment of the 1930s depression to provide the catalyst for the work to start in what would become the RDR. The Minister of Public Works, Bob Semple the ebullient and colourful minister in the first Labour government wrote in a foreword to a government booklet “Water put to work”; “We as a nation cannot afford the continued idleness of such extensive resources not only for our own good, but for the benefit of the world at large”. Work began on the scheme on April 2nd 1937 and was completed in November 1944. Race water first generated electric power at Highbank power station on June 8th 1945. Expected to cost £1.5 million pounds, the scheme costs grew to £2 million pounds.

Since 1945 there have been a number of amendments to refine the efficiency of the RDR. Montalto, the second hydroelectric power station was built in 1981 and started producing electricity a year later. The Sandtrap was designed and built at a similar time to remove much of the suspended sediment from the water by reducing the velocity of the flow. The sediment causes wear and tear on the hydro electric turbines and can cause gastric problems for sheep and lambs when washed out onto paddocks. Conversely the sediment is a good bonding agent that can help to plug microscopic holes in the race lining.

The RDR Resource Consents were renewed by Environment Canterbury in 2008. Part of the consent conditions required the RDR to install fish diversions to reduce the number of native and exotic fish from becoming entrained in the Race. 2Kms downstream from the Rangitata River intake a behavioural screen called a Bioacoustic Fish Fence that uses bubbles and underwater sounds to divert fish to a channel returning them to the river, was installed in 2007. At the South Ashburton River, a physical rock gallery was installed in 2008 together with a bypass to return fish to the river.

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