## RATIONING LIQUID GOLD

goes on - which is just as well, as access to the essential fluid gets more and more restricted and expensive. OWEN POLAND

t's 'water for the connoisseur' according to the label, and as I sipped a glass of Waimak sparking mineral water it occurred to me what a precious commodity it really is. After all, at \$1.60 a litre, the fluid drawn from a natural aquifer deep below the Waimakariri Plains is a thousand times more expensive than perfectly drinkable Auckland tap water. No wonder irrigation pioneer Brian Cameron titled his 2009 treatise on the history of Mid

Canterbury irrigation 'Liquid Gold'. With at least 14 irrigation schemes on the drawing board over the next decade, the numbers have already been crunched on this modern-day irrigation gold rush. Most of the action will be in Canterbury where the New Zealand Institute of Economic Research (NZIER) says the net impact of irrigation will increase farm-gate production by \$6,028 per ha. Collectively, the schemes will add another 347,000 hectares of irrigated land which according to the NZIER will boost GDP by 0.8% and create an additional \$4 billion

worth of agricultural exports by 2035.

One scheme waiting in the wings is the \$600m Ruataniwha Water Storage Project that promises to unlock high-value agriculture in Hawkes Bay. Due for completion in around five years, the project aims to deliver piped water to within three kilometres of every farm in a 30,000 ha irrigation zone at what consultants say should be an 'affordable' farm gate price of 20-30 cents per m3.

According to the NZIER, production from the irrigated area would increase by around 65 per cent, from \$2,010 to \$3,326 per ha. It's estimated that the Ruataniwha project could encourage an influx of more than 100,000



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dairy cows, potentially lift regional GDP by 4%, increase employment by 3.6% and send an additional 8,000 export containers through the Port of Napier. Heady stuff.

The stalled \$400m Central Plains Water Scheme in Mid Canterbury is also under starters orders after two breakthrough developments in October. A \$5m loan from the Selwyn District Council secured its viability and, subject to the Government overturning the Rakaia River conservation order, Environment Canterbury has given the green light to use water from Lake Coleridge. An alliance with Solid Energy to manage the \$100m first stage has lent added certainty.



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However getting projects up and running remains a challenge. In late 2011, the Government allocated \$400m for irrigation which would theoretically be drip-fed from its Future Investment Fund (FIF) into the proposed Crown Water Investment Company and through the Irrigation Accelerator Fund. While some of the \$35m allocated to the IAF over the next five years has started flowing into various projects, Irrigation New Zealand Chief Executive Andrew Curtis is concerned about the level of bureaucracy and some of the "hurdles" being set. "It needs to be about enabling and getting people over the line."

Funding was originally meant to come from the Government's now stalled asset sales programme, essentially in the form of an equity investment in the build phase of projects. The precise shape of that investment is apparently still being worked through. But given that 30-40 per cent of farmers are either not interested or too cash-strapped to invest in irrigation, Andrew believes that the Government should consider taking 'dry shares' in projects. "If you could have a Government that came in and played that dry share role, that makes it more affordable for everyone."

Not that everyone's happy about public funding. The Greens argue that the high cost of the Ruataniwha project means that dairying will be one of the few land uses able to afford the cost of water and that land use intensification is likely to pollute waterways with nutrient and pathogen run-off. They argue that land use needs to change - and water quality improve - before any irrigation expansion occurs. However Andrew says farmers are in a new era where they have to manage water use within strict limits being set by new regulations like the National Policy Statement (NPS) for Freshwater Management and the proposed Canterbury Land & Water Regional Plan. The Greens, he claims, are out of touch. "Their argument's a bit old hat really, it's a bit 'yesterday' is how I'd describe it."

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Down on the farm, many irrigators haven't exactly embraced the Government's requirement for compulsory water meters under the National Environmental Standard for Water Metering. Less than two months out from the November deadline, one third of farmers in Canterbury and two-thirds in Otago did not



BRIDGE OVER THE WAIMAKARIR

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have meters - leading to a situation where it became physically impossible to install all the necessary meters in the time available. Environment Canterbury responded with letters advising that failure to commit to meter installation by signing up a service provider would result in a costly inspection. Further resistance would potentially lead to abatement notices and prosecution.

While metering systems can be costly, and complex in the case of open channels, the main concern is that they'll put farmers on the 'slippery slope' to being charged for water. However Andrew says meters are "a nobrainer for sustainable irrigation". You can't manage what you can't measure he says, "so

metering is really about using these resources as efficiently as you can".

(It's perhaps worth noting here that Canterbury farmers pay a volumetric charge for water of around 15 cents per m<sup>3</sup> compared to the \$1.34 per m3 Aucklanders pay for their drinking water.)

When it comes to efficiency, Dr Tony Davoren of HydroServices Limited has led the way on the Canterbury Plains with his use of soil moisture monitoring and evapotranspiration models to accurately determine irrigation requirements. While crop water use averages around 1.5-2mm/day in spring, it can soar to 7-8mm/day in some crops during a prolonged westerly cycle. Tony has calculated that it



## CANTERBURY - A LANDSCAPE OF CONTRASTS.

takes only a 1mm drop in soil moisture below a certain 'stress point' for production to fall by 0.3 per cent. Using neutron probes to measure moisture on a regular basis, HydroServices combines the data with weather forecasts to create an irrigation management programme to ensure sufficient soil moisture for optimum growth.

Christchurch-based Aqualinc Research Limited also advocates the use of water meters to provide accurate flow rate data for assessing irrigation performance. Using seven key performance indicators - ranging from pressure and flow rates through to energy and labour efficiency - Aqualinc aims to improve efficiency and reduce waste by recommending shortened runs, automatic cut-offs, and reduced pressure that will save thousands of litres of water and thousands of dollars in electricity use.

Increased automation and improved control is the next big thing. Using GPS technology in conjunction with its customised FieldMAP programme, the variable rate irrigation system (VRI) developed by Precision Irri-

gation remotely controls individual sprinklers on centre-pivot or lateral-move irrigators to adjust application rates over different crops or soil types. As well as avoiding unproductive areas like tracks, lower application rates can reduce overwatering, run-off and associated nitrate leaching. Among the claimed benefits are a 9 to 26 per cent saving in water which equates to 27-77 kgCO2-eq/ha/yr energy savings. Precision Irrigation recently celebrated its 100th sale, and client relations manager Sarah Wilson expects demand to rise as increased production from dairy conversions and the like put more pressure on water resources. "Having a system like ours where you can increase the efficiency of water use makes sense." Not surprisingly, VRI precision comes at a price namely \$80 to \$100 a metre to install the necessary software and hardware; that's \$40-\$50k to outfit a 500 metre irrigator. Sarah says they've had great feedback on the savings achieved. "We've got one customer who calculates a 46 per cent return on investment per year as a result of irrigation infrastructure changes

coupled with the precision VRI technology."



The focus now is on providing more online tools for farmers to monitor and manage systems in real time to further improve decision making.

Andrew says VRI provides a "nice glimpse" into the future. "Essentially the whole thing is about the delivery of water and nutrients on an as-and-when basis." However he says the biggest short term challenge is "getting the masses to swallow the stuff that works". With water quality about to join allocation limits as another bottom-line for farmers – the Otago Regional Council's move to impose strict nitrate leaching limits being one example – Andrew hopes an industry campaign will encourage more farmers to achieve best practice. But given the response to the compulsory use of water meters, he's got a "funny feeling" that some blunt instruments might be useful. "You do need a blunt instrument at the end to pick up those people who just don't want to." As one of Irrigation NZ's guiding principles states, a right to take water should reflect the 'social contract' irrigators have to undertake 'Good Management Practice' in order to achieve efficient and effective irrigation. Amen. 🕑