

CASE STUDY: VALETTA

World-first irrigation project opens in Mid Canterbury

A \$30million irrigation project – which broke new ground globally by manufacturing irrigation pipe onsite – launched in March promising environmental and water efficiency gains for its farmers and the Mid Canterbury community.

The official opening of Valetta Irrigation Scheme's 84km underground pipe network replaces a former open race channel system which lost irrigation water through seepage and evaporation.

Around 40 farmers and irrigation industry representatives attended a tour of the scheme followed by a BBQ and speeches at the Lagmhor Westerfield Memorial Hall.

Valetta Irrigation Scheme Chairman Alistair Morrison says the opening was a pivotal moment for the scheme allowing shareholders to improve their environmental footprint, while increasing the profitability and employment potential of farming in the district.

"Delivering water to our farms using gravity-fed pressurized pipes will reduce conveyance while at the same time improving water efficiency and the amount of land that can be irrigated. Our farmers can expect to see significant savings through a reduction in evaporation and seepage losses, on-farm pumping costs and the possibility of electricity generation where water pressure allows."

Piping the scheme was first talked about in 2007 but the idea was initially dismissed because of cost concerns. "The following year we employed Aqualinc and they pointed out a more efficient pipe network could produce water savings of nearly 40%. Being able to sell that extra water helped fund the transition to more efficient irrigation," says Mr Morrison.

As well as water savings, 55 hectares of land has been returned to productive use through ditches being filled in. The scheme also saves (through gravity) electricity that could power up to another 985 households and when the two generators are fitted to the pipeline further energy will be generated, enough to power up another 1000 house.

The scheme has only 41 shareholders but nine Barrhill Chertsey Irrigation farmers joined the project enabling water to be spread even further, there is spare capacity to provide for further expansion.

Valetta delivers water from the Rangitata Diversion Race (RDR) and currently irrigates 13000 which is nearly double from the old border dyke days with the new piped network and the expanded area including BCI shareholders.

Background

Valetta was originally an open race border dyke scheme opened in 1958. After piping the scheme was first mooted, Bosch Irrigation Ltd (BIL) came up with the idea of importing a pipe extruding plant capable of making pipe up to 1.6m in diameter. This pipe could carry up to 7 cm³/sec of water feeding into two storage/settling ponds capable of storing one day's supply of water for the entire scheme. Pond one is 40m in altitude below the Rangitata Diversion Race and pond two is 40m in altitude below pond one.

The storage ponds serve two purposes – one to settle out silt; the other to take energy out of the water. BIL devised the process of putting water through two turbines to generate up to 2.2 mega watts of power out of this energy. If there were no settling ponds the pressure of the water would build up requiring far heavier pipe to contain the pressure.

Water is conveyed from the RDR intake through an open channel and piped into the balancing and settling pond at the top of the scheme. From here it is conveyed through a piped network through another balancing pond out across the scheme area through a total of some 73km of HDPE pipes ranging from 1.6m in diameter down to 200mm to 58 farmer outlets. The storage volume of the ponds provides around 1 days storage which allows each farmer to have "on demand" water for their property.

Valetta supplies water to forty one shareholders and nine Barrhill Chertsey Irrigation farmers. Each shareholder gets a minimum pressure of 4 bar at each outlet which allows centre pivots to operate. The outlets are capable of being turned on and off via the internet, where you can also view in real time its pressure and flow rate.

In addition to manufacturing the pipes, BIL were responsible for the design and construction of the scheme including the telemetry system which monitors the flows and pressures to maintain the network in its correct operational range.

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