

# GERARD VAN DEN BOSCH AND THE BIG PIPE PEOPLE



**AQUADUCT NZ**

**PURPOSE MADE  
LARGE BORE  
HIGH PRESSURE PIPE**

## VALETTA IRRIGATION DESIGN AND INSTALLATION

### INNOVATOR

The innovations are multi-faceted and hard to separate. The common denominator is the innovator. Valetta exemplifies the innovations.

Former farmer, irrigation supplier then pipe manufacturer and installer, Gerard van den Bosch, Managing Director, Aquaduct NZ and Bosch Irrigation Ltd, is well known for thinking outside the square and getting results. Gerard is a 'go to' man for irrigation design across NZ and overseas.

Gerard has created many innovations for the recently completed highly successful Valetta Irrigation Scheme. Bosch's unique installation solutions and Aquaduct's industry firsts work together, reducing Valetta's capital costs while providing each farmer with the best irrigation outcome. The Valetta design combines low running costs, sustainability, value

added in-line power generation, lower carbon footprint and radio telemetry control at farm outlets.



*Gerard van den Bosch,  
Managing Director, Aquaduct  
NZ and Bosch Irrigation Ltd*

### INNOVATION FROM GO TO WHOA SCHEME DISTINCTIVES

- **ECONOMICAL ON-SITE CUSTOMISED PIPE PRODUCTION** - Aquaduct supplied over 80kms of pipe in sizes from 1.6 metres diameter to 200mm, in lengths up to 250 metres, from NZ's largest capacity plant - extruding up to 5800 tons of pipe in 60 days
- **PIPE EXTRUDED ON SITE IN 100M+ LENGTHS** - saves 80% of welds and a week's welding time for every kilometre, reducing installation time and cost
- **CUSTOMISED TRENCHING MACHINE** - screens out cobblestones for fine bedding
- **VIBRATED PIPE DURING BACKFILLING** - perfectly beds the pipe, greatly increasing longevity
- **INNOVATIVE FARM OUTLETS** - simple low-cost flow and pressure control using butterfly valves, eliminating hydraulic valve 'dirty water' problems. Farmers can turn their system on or off with telemetry using internet on smart phones or computers
- **BETTER WATER SHARING** among farms to efficiently utilise total take
- **PIPE OPEN RACES** - Irrigating an extra 3000 hectares with the same take from the RDR optimises sustainability
- **GENERATING 2200KW** of electricity from excess pressure
- **PRESSURISING WATER** to all shareholders, saves over \$2.3M pumping costs reducing carbon footprint
- **RETURNING LAND** - approximately 50ha previously used by the race system and freeing access that was blocked by races



*World first - relocatable pipe extrusion factory in a marquee, makes the pipe on site, greatly reducing transport and welding costs and saving time*

*Large Bore PE Pipe factory in the field*



*1600 mm diameter pipe going into the ground*

### Bosch designed and adapted machinery for Canterbury Plains' unique cobblestone conditions



*Screening attachment on 65 tonne trencher*



*Vibrating plate compactor beds the pipe perfectly*

#### WHAT ARE THE COST SAVINGS

The cost savings are widespread across the board and depends on the size of the scheme.

For Valetta cost savings were in the order of \$6.4m (approximately 20% overall):

##### On-site pipe manufacture

- \$1.2m in welding costs and 80 weeks of welding time to have the factory on site.
- \$1.3 was saved in freight costs by having the factory on site.
- The cost of procuring 1.6m diameter pipe in itself is an other saving which is difficult to cost but would be in excess of \$3m over importing it as only one 12m length of pipe will fit in a standard 40 foot container.

##### Perfect bedding

The use of our 65 ton Trencher with Gerard's custom designed screening belt, saved approximately \$900,000 for screening and obtaining suitable bedding, in comparison with using imported backfill material or screening separately.

The main innovation however is not the cost saving, but the raising of the standard of installation in a practical way to lengthen the life of the scheme.

#### THE IMPACT ON FUTURE SCHEMES

The impact on future schemes of using this customised technology is that schemes are installed more efficiently (cheaper and quicker), safer (with no manual labour in trenches) but most of all better!

The biggest single item which impacts in this regard is the perfect bedding system ensuring pipe longevity. Gerard's screening and backfill pipe vibration with the

plate compactor - does it better than conventional methods, well surpassing the AS/NZS 2566 Standard.

The life of the scheme is expected to be 150 years instead of the standard 50 years. Put in the simplest form, THE SCHEME SHOULD LAST UP TO 3 TIMES AS LONG as conventionally installed schemes.

#### COMMUNITY AND ENVIRONMENTAL BENEFIT

The piped Scheme has provided better water allocation and improved monitoring to farms. The return of approximately 50 hectares of arable land to the Valetta farming community provides Bosch and Aquaduct with a great deal of satisfaction. The Scheme saves water 1200 litres per second which has increased the irrigable area by 37.5%. Valuable access is returned to farms previously constrained by water races. Piping the Scheme eliminates in the order of over \$2 million in pumping costs and reduces the carbon footprint associated with these.

The flow on economic benefits in the wider community will be felt for decades to come. The more efficient of water through piping the scheme will benefit the environment saving this valuable resource.

Gerard van den Bosch was nominated for the Innovation in Irrigation Award by Alistair Morrison, Chairman of Valetta Irrigation Limited, for Gerard's work in leading Aquaduct and Bosch Irrigation in designing, supplying pipe and installing the ground breaking Valetta Scheme using several innovative concepts including the transportable pipe factory.

Aquaduct and Bosch takes this opportunity to thank the Valetta Board for their support and encouragement.

Information, photos and art work have been produced solely by Aquaduct NZ Ltd and Bosch Irrigation Ltd with the exception of the photo captioned 'Piping the Plains' which was supplied by Brandmad Frog, 4 Bayfield Rd, Porirua, Auckland 1011, New Zealand.



*100 metre lengths towed to site by 8 wheel drive all-terrain truck.*