



## Welcome to pivotpointNZ!

**pivotpointNZ will be your first source of information for design advice, tips and ideas, new pivot product updates and project profiles from around the New Zealand region.**

In this issue, we feature some tips and ideas for effective maintenance of your pivot hardware over the winter months. And we also profile a project that WaterForce Hawkes Bay recently completed in Taupo – a new wastewater disposal system with centre pivots to disperse Taupo's wastewater.

## Maximise the working life of your pivot

WaterForce stocks and recommends V-Lube Gear Case Oil to ensure you maximise the working life of your pivot gearboxes.

This oil is a compounded worm lubricant containing non-corrosive extreme pressure additives, specifically designed for worm drive pivot gearboxes and centre drive gear motors. This 2½ gallon container is designed to provide adequate oil for one drive unit – ie 2x gear boxes and 1x gear motor. A must for every pivot operator to have in the shed!

Note: The oil bath in worm gear cases may reach temperatures up to 94°C. Quality oil is essential for gearbox longevity.

**Price: \$108.00 excl. gst per 2½ gallon container or for volume orders please contact your local WaterForce branch.**



## Install Ultra Low Pressure Sprinklers

**This will reduce your power bill and can improve your application uniformity.**

Pivot sprinkler and regulator technology has continued to improve dramatically over the last few years. If your system is operating 20psi or greater pressure regulated sprinklers then you should be considering upgrading your machine to some of the latest 10 or 15psi sprinkler technology.

100% upgrade of your sprinkler package is not always required, it is important to focus on the end of the pivot first as this part of the pivot irrigates the most land. The outer sprinklers and regulators often wear first too as they receive the most abrasive particles.

Call into your local WaterForce branch to view the latest range of sprinkler technology.



## Fertigation

Fertigation is becoming common practice for pivot irrigators. A uniform application of fertiliser on to land via your irrigator will ensure growth and efficiency.

If you want to know more please contact your local WaterForce branch.

## Project Profile



# Wastewater disposal solutions to support New Zealand's adventure town

This project undertaken by WaterForce Hawkes Bay, provided Taupo District Council with a wastewater disposal site which included roading, a pump station, control services and surface irrigation. The site once completed, would interface with the existing Taupo wastewater treatment plant.

Principal:	Taupo District Council (TDC)
Consultant to principal:	AWT New Zealand Ltd
Site coordination for consultant:	DMCS Ltd
Head contractor:	WaterForce
Installation completed:	December 2008

### Key infrastructure installed:

- Pumphouse and control building
- Wastewater and freshwater pumps
- Filtration system
- Control valves
- Irrigation ringmain
- Flow meters and air valves
- Eight centre pivot irrigators
- Irrigation PLC/SCADA controls
- Internal site roading

### Project Summary:

This project is the first stage of a potential three stage plan to secure the long term capacity to manage the disposal of Taupo's treated municipal wastewater.

With an expanding population base in the district and the existing Rakaunui Rd land disposal site due to be dissected by the construction of the East Taupo Arterial (ETA) roading project, TDC awarded a contract to develop a new disposal system at View Road.

The View Road land disposal site, is a step forward in that precision irrigation technology is now utilised to dispose of municipal wastewater. The wastewater is dispersed onto land planted with ryegrass. The nitrogen in the effluent is taken up by the grass, which is regularly cut, baled and sold for stock feed to offset operating costs.

A comprehensive design of the proposed site was developed by WaterForce in coordination with the principal and representatives and WaterForce subcontractors.

Environment Waikato set stringent resource consent parameters for the scheme. WaterForce had to ensure that the irrigation system would meet the application rates specified in the consent. The system also had to provide data for comprehensive logging and reporting of application rates, volumes and site operations.

**The design had to consider the following:**

- A maximum application rate of 5mm of effluent applied per hour
- A maximum application rate of 15mm per any 24 hour period
- A maximum application rate of 45mm per week.
- A maximum nitrogen loading rate of 550 kg total nitrogen per hectare per year.

Furthermore, there is to be no detectable spray drift, run-off or application of wastewater to occur within defined buffer distances of the property boundaries. The irrigation system must automatically shut down during weather extremes: high wind, heavy rain or freezing temperatures.

To ensure uniform application, WaterForce provided centre pivot irrigation to disperse the treated wastewater.

The project site is particularly ideal for pivot irrigation with undulating land gradually falling away from the storage ponds at the high point to provide natural gravitational assistance to the system.

**The pivots for the project include a number of features:**

- ‘Turf grip’ tires to reduce rutting
- ‘Boom Backs’ which irrigate behind the travelling wheels to reduce rutting and damage.
- Sprinkler sector control – sprinklers are controlled in banks to prevent irrigation outside the resource consent constraints.
- Adjustable trajectory end guns on the pivots dial in the distance of throw of the gun water jet.

WaterForce installed on each pivot irrigator a VALLEY PR02 control panel. At each pivot location the PLC system obtains position and other status information and sets pivot direction, speed, and operation. Each pivot is fitted with a effluent flow sensor, and a main control valve which operates to admit waste water to the pivot. This all interfaces back to the main wastewater treatment plant.

Weather stations are located on the main storage pond batter (at the high point of the site), and at each pivot. Pivot operations are halted or modified according to measured weather events local to the site and the pivot.

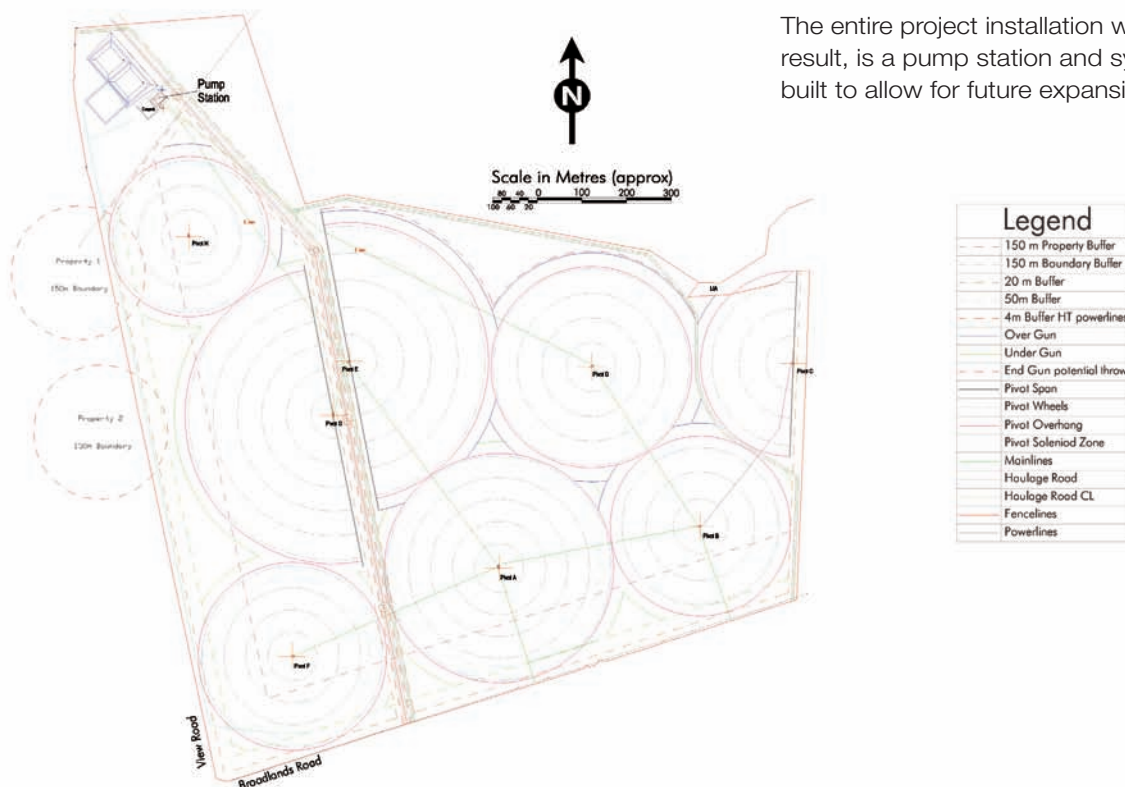
Following land clearance of the original farm services, WaterForce installed over 3.5km of uPVC ring main pipeline plus spur pipelines to outer pivot irrigator head works. The pipeline was laid with power, control water and fiber optic services required to operate each pivot as designed.

To develop the pasture, WaterForce worked alongside leading fertiliser consultants. The fertiliser provided would ultimately improve the soils around the site to optimise grass strike and initial growth prior to effluent application. A minimum of land contouring was carried out, sufficient only to ensure clearance of sprinkler heads.

Haulage roads, rigging and sealed areas were constructed through the property for site operations. Culverts, street lighting, signage, fencing and gates were included to complete the site facilities.

The pump station pipework was designed and prefabricated in WaterForce workshops, galvanised and FAT tested before delivery and assembled on site by WaterForce engineers.

The entire project installation went smoothly and the end result, is a pump station and system controls that are built to allow for future expansion.



## Further tips and advice to maintain your pivot over winter

### Pivot Auto-Flush Valve

Accumulation of sand / silt and other particles in the end of your pivot overhang is a common problem for pivot irrigators. This build-up often results in outer sprinklers applying reduced water or no water due to blockages. In some situations sediment build-ups have caused structural damage to overhangs.

To help overcome this problem WaterForce have developed an automatic flushing valve that can be retro fitted to the end of your pivot overhang.

The controls consist of a solenoid operated by a timer located at the last set of wheels. The 50mm hydraulic valve is fitted with a Tee piece on the discharge to direct water to the side rather than straight down into the ground.



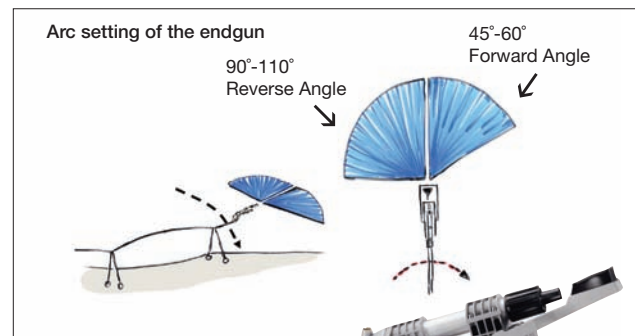
### Setting angles on your pivot endgun

To achieve maximum efficiency of your pivot endgun, correctly setting the angle of operation can make all the difference.

By setting a reverse angle of 90-110 degrees and a forwarded angle of between 45-60 degrees will help your gun deliver the correct amount of water to your end gun watering zone.

Please also ask about our **new** 12° trajectory angle endgun. This gun operates at a flatter angle than a normal endgun to improve wind fighting ability.

For more specific help and advice, please contact your local WaterForce branch.



New 12° angle endgun

## Pivot Maintenance Offer

With the irrigation season coming to a close it's time to think about the conditioning and maintenance of your pivot for the winter and the coming season.

From 18 May-30 June WaterForce will offer customers the opportunity to sign up for a Pivot Warrant of Fitness Inspection or maintenance work. All inspection or maintenance work booked by 30 June 2009 will receive free a SWAZI® beanie.

A Pivot Warrant of Fitness (PWOF) Inspection is a non-invasive inspection of the pivot and report on all repairs required. **Cost \$250.00 plus GST per pivot.**

To book your pivot PWOF or maintenance, call into your local WaterForce Branch today.

**All inspection or maintenance work booked before 30 June 2009 will receive a free SWAZI® beanie.**

