



# Irrigation Area Effluent System

**Name:** Hans van Wees

**Location:** Tinamba, Macalister Irrigation District

**Dairy Shed:** 50 Bale Rotary

**Milking Area:** 215 ha

**Herd Size:** 700 Cows

**Land Type:** Flat Irrigated

Tinamba sharefarmer, Hans van Wees, is grateful that the owner of his property took the opportunity to have the Department of Primary Industries' Nutrient Management Team design its effluent system.

The eight year old system, which features a ten megalitre dam that feeds into the property's irrigation channels, is more than adequate to cope with the demands of a 700 cow herd. It has also slashed the enterprise's fertiliser bills as Hans is able to use the nutrient-rich water stored in the dam to fertilise the property.

Hans says that soil testing, carried out shortly after the system was built, revealed the opportunities for fertiliser savings - and also the risks of over-fertilising.

**“The soil tests showed that the nutrient levels on the areas that were being irrigated with effluent water went through the roof,” he explains. “As a result, we added a pump to the system to enable us to spread the effluent water over a much broader area.”**

The pump gives Hans the ability to ensure that nutrients are distributed evenly and efficiently over the entire property. It has also resulted in some impressive savings as Hans takes account of the nutrients contained in the effluent water when calculating his fertiliser requirements. “Now, we don't purchase any additional potash, and we're saving a reasonable amount of nitrogen,” he says. “Apart from lime, the only fertiliser we buy is a bit of nitrogen.”

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Washdown water and effluent flow into a large solids trap at the side of the dairy. The solids are trapped and, when dry, are spread over nearby paddocks. The liquids are pumped (using an electric, mains powered pump and eight inch PVC) into the dam, which is located about 300 metres from the dairy.

A 40HP diesel powered stationary irrigation pump mixes the dam water to prevent slurring. When Hans wants to apply the effluent water to the paddocks, he opens a release valve into an irrigation channel connected to the dam. Water is then pumped into one or two other channels and 'shandied' with fresh irrigation water at the rate of one part effluent to two parts water.

Hans can irrigate 120 hectares direct from the dam. Alternatively, he can pump the water to another dam located further down the property, and irrigate from there.



Hans' management includes analysing the dam water, and soil testing the paddocks, so that he can identify any imbalances and opportunities for further fertiliser savings, and adjust his irrigation regime accordingly. "If a paddock needs less nutrients, we'll irrigate with fresh water only for a while. On the other hand, if a paddock needs more nutrients, we can increase the number of irrigations we do with effluent water."

Apart from checking that the water level in the dam is neither too high or too low, Hans reckons the system is pretty foolproof. It also makes his job a lot easier. "It's good for the environment because there's no run-off, and it saves us a lot of money in fertiliser," he says. "It's a pretty good system in my opinion."



## Cost Benefit Analysis

	Benefits	Costs
<b>General</b>	<ul style="list-style-type: none"> <li>■ Reduced fertiliser applications</li> <li>■ Target application for pasture response</li> <li>■ Less risk of effluent running off farm in wet weather</li> <li>■ Not irrigating waterlogged soil</li> </ul>	<ul style="list-style-type: none"> <li>■ Land lost for pond site</li> </ul>
<b>Financial Summary</b>	<p><i>To be a good investment would require benefits of about \$4,200/yr. This would give a 16% internal rate of return on the extra capital and break-even in 8 years (after interest).</i></p>	<p><b>Total Capital Cost= \$20,000 (approximate cost, 8 years ago)</b></p> <p><b>Extra annual operating costs = \$1,200/year (approximately)</b> (diesel, repairs and maintenance)</p>
<b>Financial Details</b>	<p><b>How likely is \$4,200/yr of benefits?</b></p> <ul style="list-style-type: none"> <li>■ Fertiliser savings of 100kg/ha of single superphosphate @ \$350/t over 120ha would give \$4,200/yr of benefits. Therefore it appears likely that fertiliser savings alone would have made this a good investment, even if there was no water saving, labour saving, or extra pasture production.</li> </ul>	

### Assumptions/Things Unchanged

- Area of land irrigated remains the same
- Expected life of system is 10 years

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