



# Single Pond Effluent System

**Name:** Darren, Alana and Joe Lavarda

**Location:** Buffalo, South Gippsland

**Dairy Shed:** Herringbone

**Milking Area:** 226ha

**Herd Size:** 300 Cows

**Land Type:** Undulating Dryland

Spending \$21,000 to install a single pond effluent system with a water reuse facility has been a worthwhile investment for Buffalo dairy farmer, Darren Lavarda.

“Being able to recycle the water is saving us a lot of water, and we’re meeting our EPA (Environmental Protection Authority) requirements as well.”

Until the new system was installed, Darren and his father, Joe, had pumped their dairy shed effluent every day. It was a simple system but had a number of flaws, including the potential for run-off in wet weather.

In 2007, Darren asked Barrie Bradshaw from the Department of Primary Industries (DPI) to come on-farm to look at ways to improve effluent management, including opportunities to reuse water and nutrients.

Choosing between a single pond and a two pond system came down largely to cost and the availability of land. “Just one pond is 20 by 60 metres, so a two pond system would have taken up a fair bit of area,” explains Darren.

Darren says that they were fortunate to already have an effective system in place for separating solid matter from the effluent (an 8m x 2.5m wide sump at the end of the yard). “I guess that made the decision to go with the single pond system easier, because I know I don’t have to clean out the pond as often.”

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The solids from the sump are removed every two or three weeks and piled in a heap by the dairy. They are then spread around the outer paddocks. The remaining effluent collects in the pond and is pumped out using an electric pontoon pump. It is recycled for washdown and in spring and autumn is irrigated onto nearby paddocks.

Darren irrigates 45 acres (18ha, approximately 8% of the farm) with water from the effluent pond, using a travelling irrigator with two inch pipe. Darren feels that widening the pipe would enable him to irrigate a larger area and he may do this in the future.

Darren rotates the paddocks that are irrigated. He has reduced the amount of fertiliser applied to those areas to a single application each year, rather than two applications.



Darren estimates that this saves him between \$800 - \$1,000 per year. He has not yet soil tested the paddocks to determine whether any further savings can be made.

Apart from cleaning out the sump, the system requires little maintenance, and the only ongoing cost is power to run the pump. "I expect we'll have to clean out the pond in a few years, but we haven't had to yet".

Darren feels the single pond system is a definite improvement on the direct application system they had. It saves him time (washdown takes just fifteen minutes), a considerable amount of water, and fertiliser costs.



## Cost Benefit Analysis

	Benefits	Costs
<b>General</b>	<ul style="list-style-type: none"> <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> <li>■ Reduced water use at the dairy</li> <li>■ Reduced fertiliser applications</li> <li>■ Yard wash down faster, therefore reduced labour</li> </ul>	<ul style="list-style-type: none"> <li>■ Land lost for pond site</li> </ul>
<b>Financial</b>	<ul style="list-style-type: none"> <li>■ 15 minutes saved per day @ \$25/hour = \$2,281/yr</li> <li>■ 0.5 t of dry matter/ha extra pasture grown on 18ha @ \$150/t dry matter = \$1,350/yr</li> <li>■ Fertiliser estimate = \$1,000/yr (potentially more after soil testing)</li> </ul>	<ul style="list-style-type: none"> <li>■ \$7,000 pond</li> <li>■ \$7,000 new pump (for recycling)</li> <li>■ \$2,000 pipe upgrade</li> <li>■ \$2,000 power to pump</li> <li>■ \$3,000 labour and fittings</li> </ul>
<b>Summary</b>	<p><b>Total = \$4,631/ Year</b></p> <p><i>To be a good investment would need a benefit of \$3,000/yr to give a 15% return on extra capital and to break even in 8 years (after interest).</i></p> <p><i>\$4,631/yr of benefits would give a 29% return on extra capital and break even in 5 years (after interest).</i></p>	<p><b>Total = \$21,000 (approximately)</b></p>

### Assumptions/Things Unchanged

- Area of land irrigated remains the same
- Power difficult to quantify but assumed the same,
  - Extra power for pumping recycled effluent for yard cleaning
  - Less power for effluent irrigation due to less volume from recycling and evaporation
- Life of system 10 years

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