

# ***The environmental, social and economic benefits of water use, reuse and effluent management projects***

## **Oakey Abattoir Pty Ltd – Oakey, QLD**

### **The problem**

Like many abattoirs, improvement in dealing with the many environmental aspects of the plants operations has been a major concern for Oakey Abattoir. Major issues include water usage, nutrient and oil/grease load, and efficient disposal methods for effluent. Over the last 12 months, attempts have been made to address some of these problems.

### **The solutions – 1. Water Reuse in Cattle Yards**

A project set up to identify ways of saving water and/or reusing water around the plant identified a significant saving could be made by reusing steriliser water from the slaughter floor to wash down cattle and cattle yards. At present, Oakey are saving over 0.5 ML a week on water through washing down yards with the reused steriliser water. Soon, overhead sprays will be fitted to the entire receival yards, creating a 2 – 2.5 ML saving of water per week. An unexpected benefit from this project has been considerable reduction in work, attributable to the fact the warmer water is making it easier to shift dirt and manure from the floors of the yards.

The capital for this project was approximately \$25,000. Running costs include electricity for 2 pumps. At \$0.30/kL for pumping costs (out of the bores), this project has the opportunity to save the company up to \$750 per week, or up to \$37,500 per year.



***Covered yards***



***Retro-fitted DAF***

### **The solutions – 2. Dissolved Air Flotation System**

Oakey's existing save-all was very inefficient at extracting excess fat from primary treated effluent. This led to a heavily increased nutrient and oil/grease load on their wastewater treatment system. Consequences of this would have been: the existing system being unable to cope; high level of nutrients in tertiary treated effluent and having to build larger effluent treatment systems.

A decision was made to retro-fit the existing save-all with a Dissolved Air Flootation (DAF) system. As a result Oakey Abattoir is now extracting more fat and nutrients from the effluent stream than ever before. This has led to a reduction in the nutrient load being placed on the wastewater treatment ponds and has increased the rendering plant's daily tallow yield.

The capital for this project was approximately \$45,000. Running costs include power to DAF system and save-all, and power for air. Oakey have the capacity for saving up to an extra 3 tonne of fat per day. Based on an average value of \$200/tonne for inedible tallow, this equates to \$600 per day, or up to \$150,000 per year.

### **The solutions – 3. New Irrigation**

The irrigation system that had been in place for over 10 years was severely undersized, and very inefficient. This meant that evaporation and storage dams were being filled to capacity. The water balance (amount of water going in versus the amount going out) did not equal, causing the evaporation pond to slowly rise in level as each year passed.

A new irrigation system was installed in August 2003. This system has given improved reliability, and the size and layout of the pipeline means greater efficiency of effluent output. The capital for this project was approximately \$100,000. Running costs include labour costs for the changing of irrigation, tractor expenses, and a 30 kW electric pump and basic maintenance.

### **The solutions – 4. Cropping**

Effluent was not being fully utilised by simply irrigating onto existing grass. One of the many holding paddocks was turned into a cultivated pasture using a grass and medic mixture. The plan is to grow it for feed for cattle, and then, in slower months when there aren't many cattle in the paddocks, to cut and bale the crop for future use.

Capital – approx \$12,000. Running cost include labour for irrigation. All other working of the crop (deep ripping, scarifying, planting etc) was done by a local farmer/contractor.

It is too early to determine the crop value but at two cuts per season, and using an average yield, the paddock has the capacity to save approximately \$35,000 per year in feeding costs.



***Irrigated cropping paddock***



***Newly planted area of trees***

### **The solutions - 5. Trees**

Areas of trees have been planted around the abattoir site. This is being completed in stages, with two areas being planted over the last 18 months, and more areas to be planted this year, and in years to come. The majority of the trees are being irrigated using the plant's tertiary treated wastewater.

Benefits from the planting of these trees include:

- Improved visual amenity (the abattoir site is very flat and undulating)
- Improved condition of soil
- Utilisation of irrigation water
- Improved shade cover for cattle
- A form of future carbon credits

Capital – approx \$12,000 so far. Running costs include labour costs and diesel irrigation pump.