

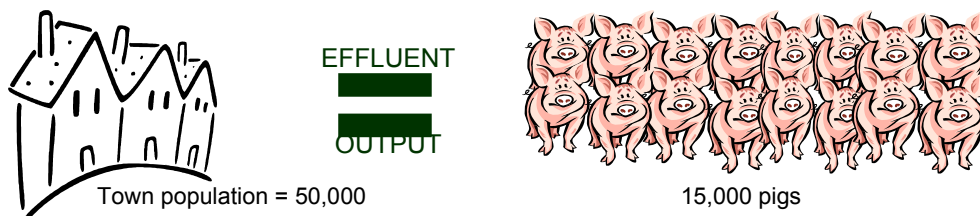
## Berrybank Piggery

### There's more to pig waste than smell!

Half of what pigs consume is returned as waste. Charles Integrated Farming Enterprises Pty Ltd (Charles I.F.E. Pty Ltd) considered this to be a poor return on their investment and a poor use of resources at their Berrybank Piggery. An initial \$2 million outlay to improve farm efficiency has resulted in savings of \$435,000 a year, and has been able to reduce their impact on the environment by using biogas to generate electricity, recycle and conserve water, and turn waste into fertiliser or profit.

#### In the beginning...

Berrybank Farm Piggery, located at Windermere Victoria, is home to 15,000 pigs. The pigs produce 275,000 litres of sewerage effluent on average per day that has an organic solids content of about 2%. This is equivalent to the sewerage output of a town of 50,000 people.



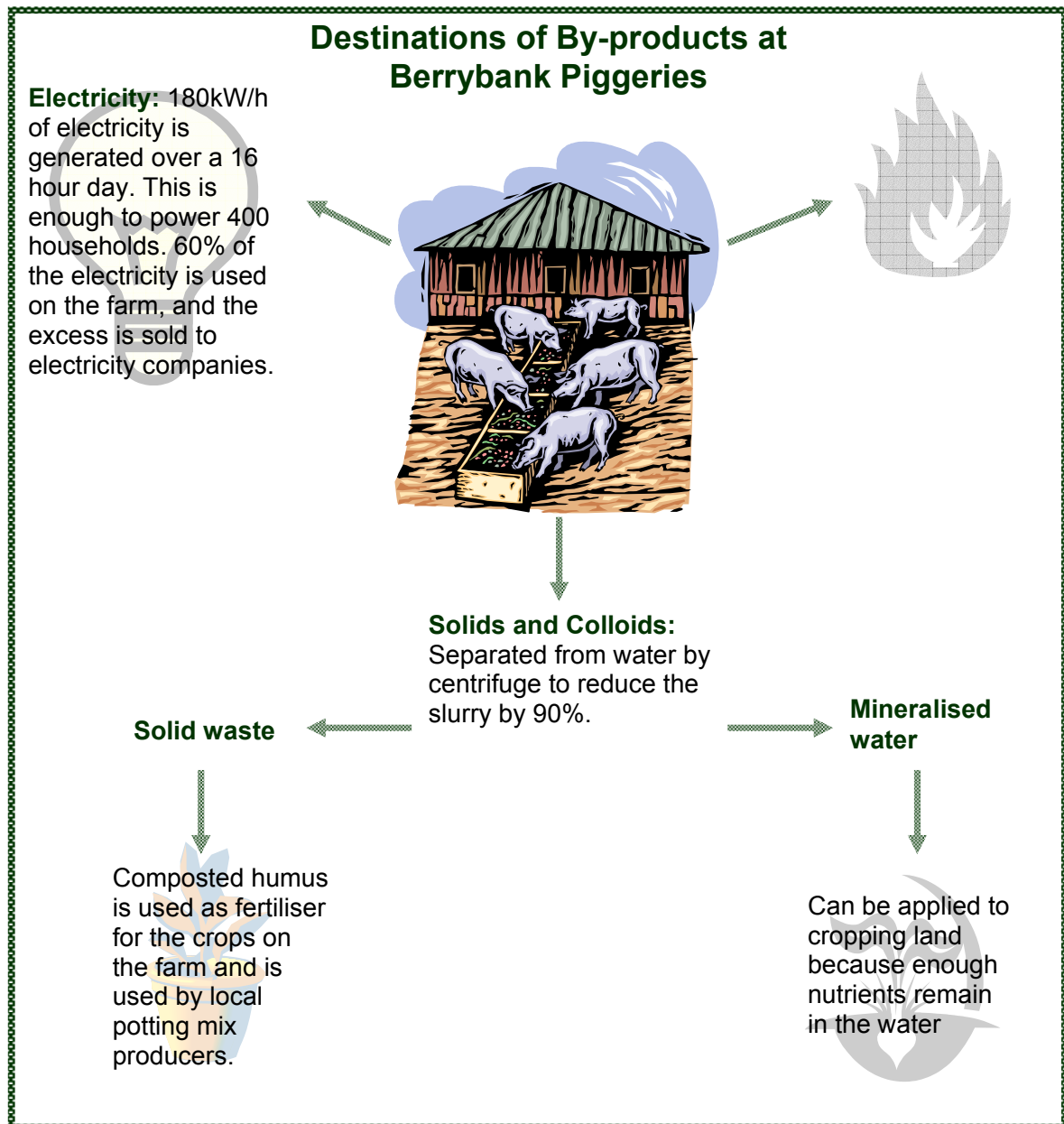
Charles IFE made the decision in 1989 to move towards a "Total Waste Management System" that would remove odorous wastes and groundwater contamination, and heavily reduce their consumption of 400,000 litres of bore water per day.

*"Charles IFE is finding that the old farming philosophy of wasting nothing makes good business sense."*

(Australian Centre for Cleaner Production, 1998, p.20)

## Getting the most out of waste

The new Total Waste Management System was implemented in November 1989. The system was able to recover all the waste produced by the farm, treat it, and use the by-products on the farm or sell them at a profit.





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The system uses simple and straightforward technologies and methods, and involves seven stages:

#### **1. Automatic and continuous waste collection**

The existing drainage around and under the piggery had to be modified to recover the waste. Automatic flushing valves were installed and linked to the main pumping station. The valves operate by remote to control the flushing at times during the day.

#### **2. Grit removal**

The pigs' diet of meat and bone meal contain granules of bone that is undigested and excreted. Grit in the slurry is removed by sedimentation to prevent damage to the internal pump mechanisms.

#### **3. Slurry thickening**

The thickening plant system is made up of the already existing screen and a newly developed flotation system. Flotation allows the smaller particles suspended in the slurry to separate from the water.

#### **4. Primary digestion** **5. Secondary digestion**

The primary and secondary digestion uses anaerobic digestion to breakdown the wastes. This process occurs naturally in swamp gas, where bacteria break down rotten vegetation to produce a smelly biogas. The digester provides the right environment for faster and controlled digestion by removing oxygen, mixing the materials and providing optimum temperatures for the bacteria to do their work.

#### **6. Biogas purification**

The potentially damaging sulphur is removed from the biogas with scrubbers, traps and dehumidifiers.

#### **7. Cogeneration thermiplant**

The biogas is converted to thermic heat and electricity.



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## Benefits

The benefits of cleaner production are economic, social and environmental.

### What is recovered?

- About 7 tonnes of waste solids, used as fertiliser
- 100,00 litres of recycled water
- 100,000 litres of mineralised water, used as fertiliser
- 1,700 cubic meters of biogas per day, that provides fuel for co-generating 2900 kW of electricity per day.

### Benefits of cleaner production?

- 70% reduction in water usage
- improved conditions for the pigs
- improved working conditions for staff
- elimination of odour
- elimination of groundwater contamination

The annual estimated savings that result from cleaner production include:

- **Electricity - \$125,000**
- **Water - \$50,000**
- **Fertiliser - \$250,000**

A total annual saving of \$425,000 allowed the initial outlay to be paid back after 6 years. As a result, Berrybank has changed its image in the community from an environmental problem to an accepted industry offering a good working environment.

## Conclusion



The environment is pivotal to the philosophy underpinning the management of Berrybank Piggeries. These practices are examples of how being mindful of our environmental impact can produce changes that have financial, environmental and social benefits.





## Resources

- Australian Government Department of the Environment and Heritage- Total Waste Management System: Berrybank Farm Piggery- Charles I.F.E. Pty Ltd: [www.deh.gov.au/industry/corporate/eecp/case-studies/charlesife.html](http://www.deh.gov.au/industry/corporate/eecp/case-studies/charlesife.html)
- Environment Industry Development Network- Total Waste Management System for the Pig Industry: [www.eidn.com.au/berrybank.html](http://www.eidn.com.au/berrybank.html)
- HORIZON Solutions Site- Case Study: [www.solutions-site.org/cat11\\_sol68.htm](http://www.solutions-site.org/cat11_sol68.htm)

## Acknowledgements

Information in this website has been sourced from other web-based case studies of Berrybank Piggeries, mainly:

Australian Centre for Cleaner Production (1998). Total waste management system at Berrybank Farm Piggery, Charles I.F.E. Pty Ltd. In *Best Practice Design, Technology and management*, p.20-22. Downloaded from World Wide Web, August, 2004, from [http://www.seav.vic.gov.au/ftp/advice/business/case\\_studies/BerrybankPiggeryCase0\\_a.pdf](http://www.seav.vic.gov.au/ftp/advice/business/case_studies/BerrybankPiggeryCase0_a.pdf)

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This case study is available on the Educating for a Sustainable Future website: [www.ballarat.edu.au/projects/ensus](http://www.ballarat.edu.au/projects/ensus)  
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