

Kia-Ora Piggery Biogas Generation System

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Kia-Ora Piggery Overview

- Family Owned
- 2,000 Sow farrow-to-finish (25,000 pigs total)
- Operating over three sites
- Covered Anaerobic Ponds (CAPs) at each site
- Generation running at two sites, one site incomplete (flaring gas)
- Liquid feed systems at each site using by-products



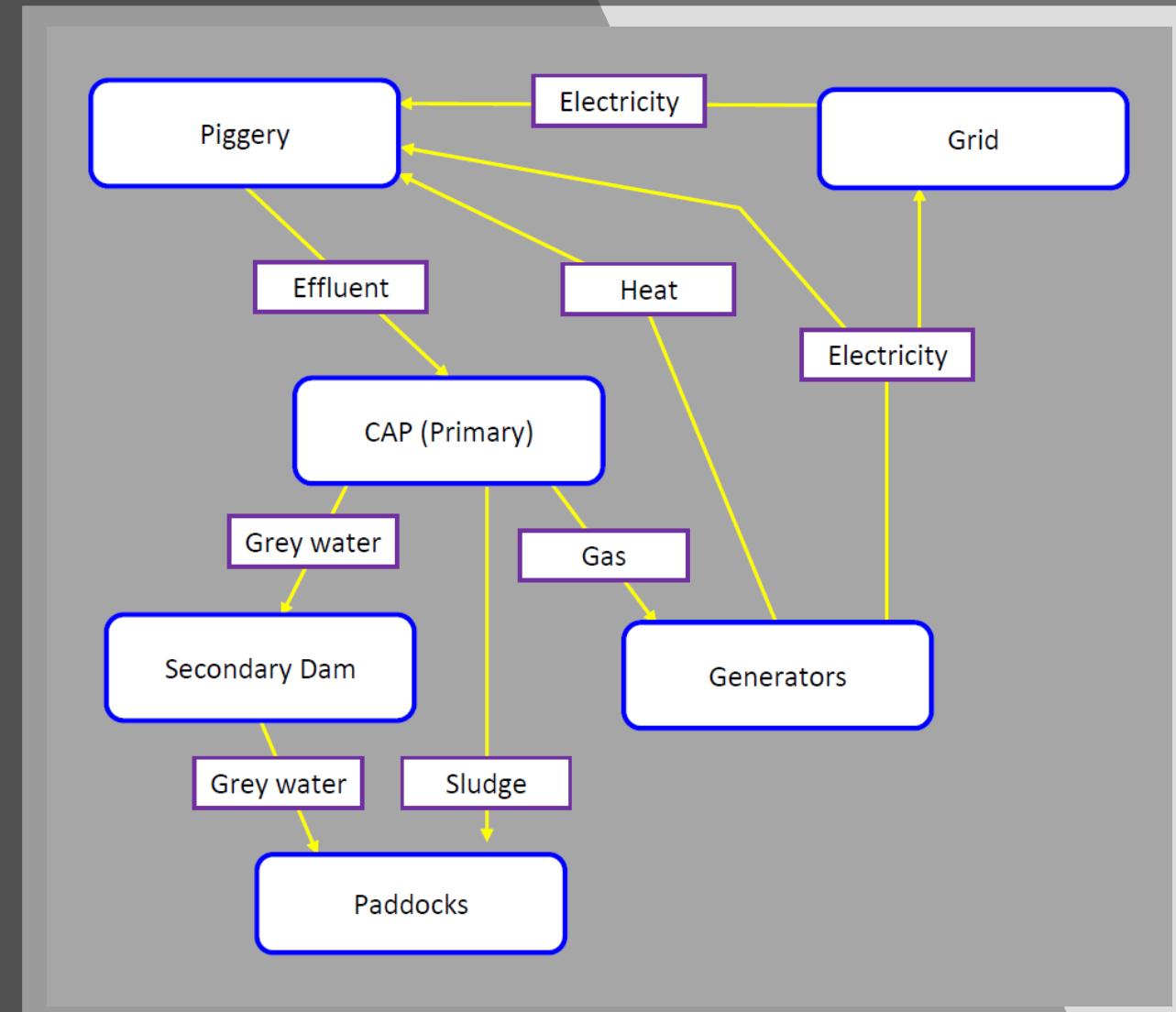
The Stats

- 16,000t/year of feed
 - 9,700t grain + 3,500t by-products (mostly liquid) + 1,500t proteins + 1,300t other
- 6,000t/year Effluent (Volatile Solids)
- 20,000t/year Carbon Dioxide (Equivalent) Destroyed
- 3,800MWh/year Electricity Potential



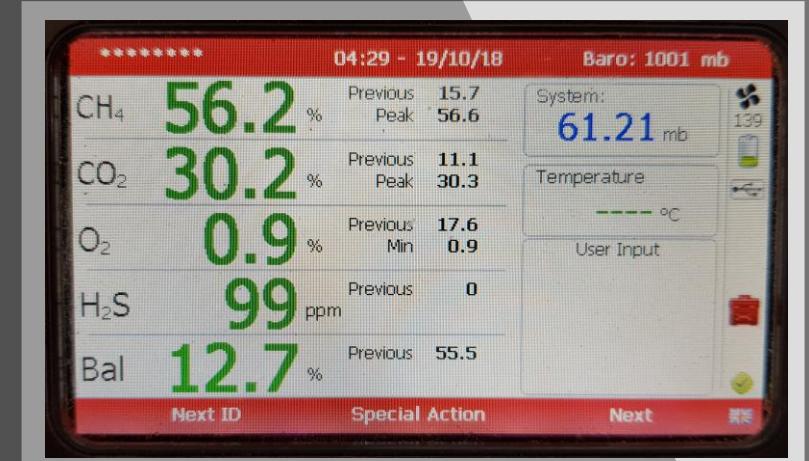
The Process

- Piggery effluent pumped into CAPs
- Gas captured under CAP covers
- Gas treated/scrubbed and pumped to engines
- Engines running on gas power alternators
- Alternators produce electricity to use on site & export
- Hot water from engines & exhausts captured for heating



Gas

- Collected under the CAP cover
- Pre-cooled
- Scrubbed in bio-scrubber
- Chilled
- Water drop-out pots



Generators

- Second hand BA Ford Falcon motors
- Belt drive to Alternator
- Currently 40KW each (potential 50KW)
- Controlled according to demand
 - Ramp up & down, shut down, start up
- Controlled according to demand
- Synchronise to grid



Advantages

- Modular type system suited to smaller operations
- Cost effective (theoretically)
- Serviceable
- Flexible running times



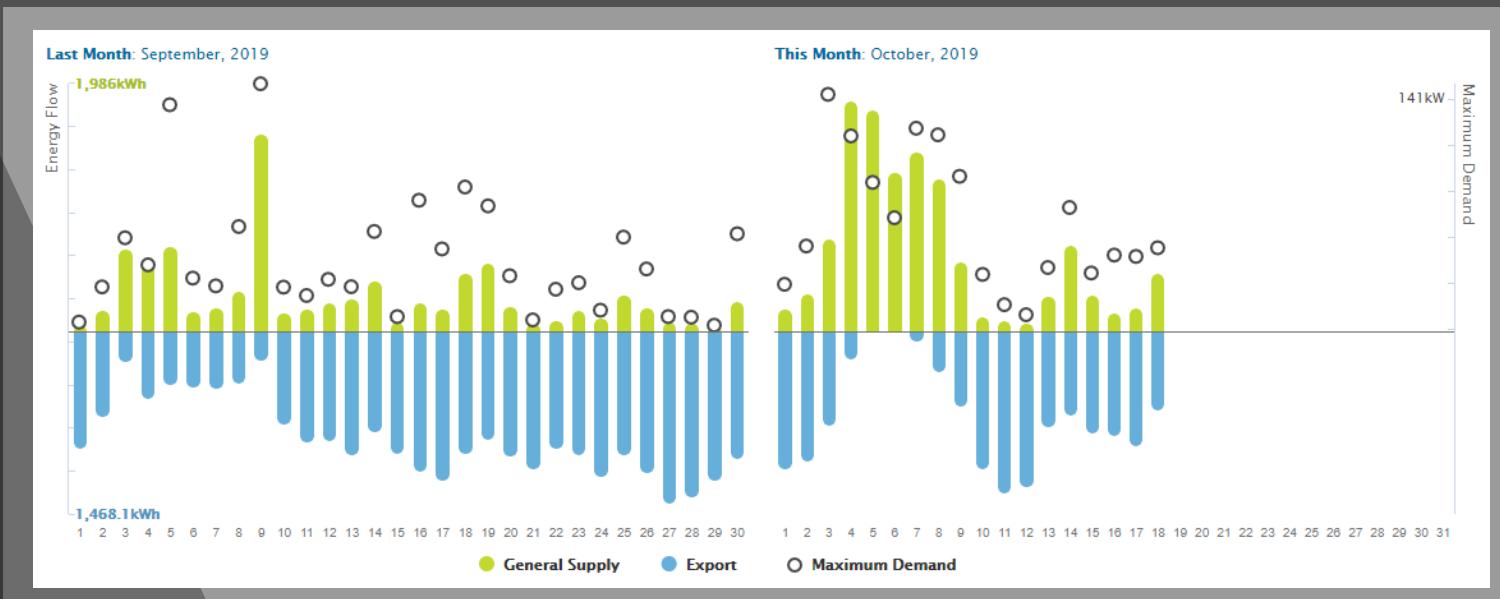
Disadvantages

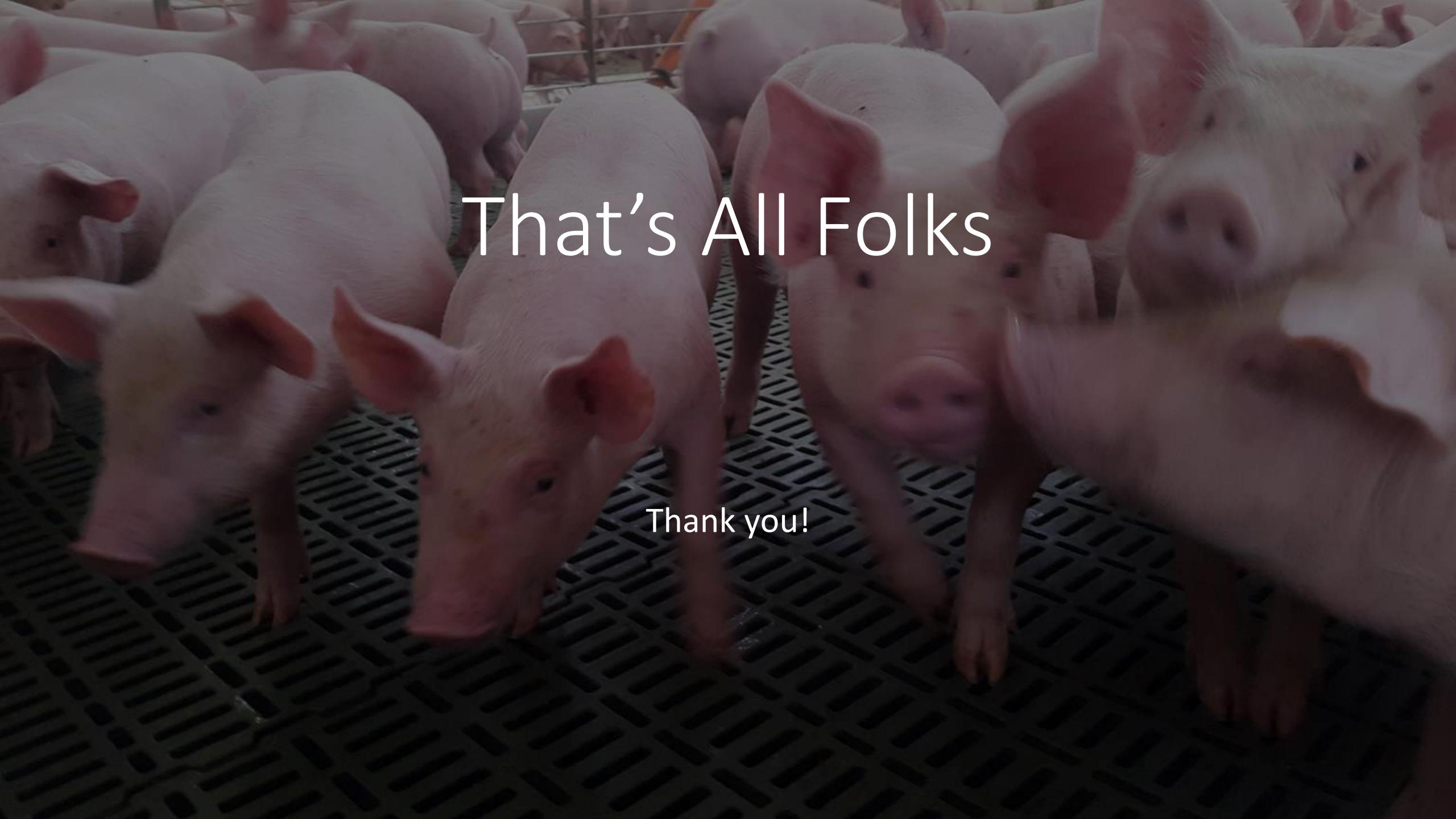
- Teething problems have been painful
- Authorisation process incredibly difficult
- Lots of different components to co-ordinate
- Budget blowout on first attempt



Rewards

- Environmental
 - Reduced emissions
 - Reduced odour (happy neighbours)
- Energy cost reduction
 - \$15,000/month





That's All Folks

Thank you!