

PigGas Report 34 – 5,990 pig grow-out unit, conventional piggery, Qld.

May 2014



Production details

This is a mid-sized family owned grow-out piggery. Weaner and grower pigs, transferred from two company owner breeder piggeries, are grown to sale weights on this site in conventional naturally ventilated sheds.

Feed consumption

Pigs are fed a mash and pelleted diet sourced from both on-farm mixing and a local commercial supplier. The diet is based on locally grown cereals. The annual feed consumption on this site is 4,189 tonnes.

Sales/Tranfers

17,680 weaners/yr are transferred to this site from two separate breeding facilities. Pigs are grown and the majority marketed as heavy finishers for domestic consumption at an average live weight of 105 kg. 17,103 pigs/yr are sold with a total net dressed weight of 1,072 t/yr.

Waste management systems

Manure is washed and manually flushed from each shed in underfloor and open drains into a two stage in-series anaerobic pond system. The primary aerobic pond has an inlet design to facilitate easier desludging of the pond. After moving through the primary pond effluent moves to a secondary pond which allows reuse and wet weather storage.



The National PigGas Extension Project is funded by Ian Kruger Consulting, the Australian Government and Australian Pork Limited.

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Manure reuse systems

Treated effluent from the second stage anaerobic holding pond is reused for flushing in the piggery. If required any surplus effluent can be irrigated on surrounding cropland using a traveling irrigation system. Solids settling in the first aerobic pond are removed and dried before spreading on surrounding cropland.



On-Farm Baseline Emissions

The current baseline emissions for this piggery total **5,706 tonnes CO₂-e/year** with an emissions intensity of **5.32 kg CO₂-e/kg HSCW**.

On-Farm Emissions Reduction Scenario

Like most conventional piggeries with anaerobic ponds, the majority of emissions on this piggery come from pond methane.

The impact of covering the primary anaerobic pond and flaring the gas was considered in combination with reducing feed wastage by approximately 5%. This scenario (see table below) reduced on-farm emissions **from 5,706 t/year to 1,177 t/year** and reduced kg CO₂-e/kg HSCW **from 5.32 to 1.10 (79 % reduction)**.

Covering the primary anaerobic pond and flaring the biogas will reduce emissions by approximately 4,490 t/yr. However, the economic viability of this option needs to be checked by experts as it will depend on the ability of future carbon prices to offset the capital cost in a reasonable pay-back period of approximately 10 years or less.

As the piggery is a naturally ventilated grower unit only, it has a relatively low energy demand compared with a breeder or farrow to finish piggery. Investment in electricity generation from captured methane on this site is therefore unlikely to be economical because most of the power generated would have to be fed back into the grid at very low financial returns compared with replacing on-site electricity use. This additional option was therefore not modelled.

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Annual Greenhouse Gas Emissions Profile (calculated using PigGas)

Emissions	Current Emissions Baseline	Reduction Scenario (kg CO ₂ -e/yr)
Pre-farm		
Grain	1,047,220	989,479
Milling & delivery	201,066	189,980
Pig freight	6,678	6,678
Straw & bedding		
Total Pre-farm	1,254,964	1,186,138
On-farm		
<i>Fuels & energy</i>		
Purchased electricity	105,570	105,570
Fuel - stationary	7,780	7,780
Fuel - transport	599	559
<i>Enteric CH₄</i>	144,522	144,586
<i>Manure management</i>		
MMS CH ₄	4,918,149	423,790
MMS – direct N ₂ O	47,127	43,461
MMS – Atmos. deposition N ₂ O	188,509	
<i>Waste applied to soil</i>		
Soil – direct N ₂ O	282,293	434,179
Soil – leaching & runoff N ₂ O	11,327	17,421
<i>Offsets</i>		
Total On-farm	5,705,837	1,177,347
Post-farm		
Pig freight	13,844	13,844
Meat processing	544,143	544,143
Exported manure		
Total Post-farm	557,987	557,987
Dressed weight sold (net) - HSCW (kg/yr)	1,071,832	1,071,832
Carbon footprint	(kg CO₂-e / kg HSCW)	(kg CO₂-e / kg HSCW)
Pre-farm	1.17	1.11
On-farm	5.32	1.10
Post-farm	0.52	0.52
Total	7.01	2.73



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