

PigGas Report 44 – 1,250 sow, farrow to finish, conventional and deep litter piggery, SA.

December 2014



Production details

This is a large family owned conventional and deep litter piggery, with breeding and growing pigs on one site in 22 naturally and mechanically ventilated sheds. It is a closed herd using artificial insemination. The majority of the finisher pigs are sold into the domestic fresh pork market at 95 kg live weight, however, a percentage are sold as breeding stock in the form of gilts and boars which are grown out to approximately 116 kg live weight.

Feed consumption

All feed grain is purchased off-site and milled and mixed into liquid feed rations on-site. Normal piggery cereal-based feedstuffs are supplemented with whey by-product from a regional cheese factory. Total feed consumed is 8,231 t/yr.



Sales/Tranfers

29.065 pigs/yr are sold with a total dressed weight of 2,270 t/yr.

Waste management systems

Manure is flushed from the conventional sheds in underfloor and open drains to two large concrete collection tanks. From there, effluent is pumped through a screw press solids separator to a further two holding tanks. Separated solids are stored temporarily on a concrete pad. Some of the effluent from the holding tanks is recycled for shed flushing and the remainder drains to a large 22 ML anaerobic pond.



Spent litter manure from the deep litter sheds is removed after each batch of pigs and transported to a solids stockpile/composting pad.



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

Effluent from the anaerobic pond is regularly irrigated to 53 ha under centre pivot irrigators and used for maize silage production in rotation with grazed cereal pastures. Effluent is also spread from the anaerobic pond by vacuum tanker onto a further 400 hectares of pasture in autumn and spring for cross-bred lamb production.

Liquid pond sludge is mixed with separated solids and spent litter solids and composted in windrows. Ninety-five percent of the compost is sold off-site to other farming enterprises as fertiliser.



On-Farm Baseline Emissions

The current baseline emissions for this piggery total **7,895 tonnes CO₂-e/yr** with an emissions intensity of **3.48 kg CO₂-e/kg HSCW**.

On-Farm Emissions Reduction Scenario

The majority of emissions on this piggery come from pond methane (6,085 t/yr).

There are two options modelled to reduce emissions on this site. The first is to reduce feed wastage of all growing pigs by 5% (from 10% to 5%). The second is to cover the pond to capture and reuse methane for on-site electricity replacement.

This scenario (see table below) reduced on-farm emissions **from 7,895 t/yr to 1,953 t/yr** and reduced kg CO₂-e/kg HSCW **from 3.48 to 0.86 (75% reduction)**.

The piggery owners are investigating the feasibility of undertaking a future covered pond project.



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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	2,057,822	1,977,661
Milling & delivery	0	0
Pig freight	0	0
Straw & bedding	31,250	31,250
Total Pre-farm	2,089,072	2,008,911
On-farm		
<i>Fuels & energy</i>		
Purchased electricity	556,686	0
Fuel - stationary	143,991	143,991
Fuel - transport	0	0
<i>Enteric CH₄</i>	260,312	260,312
<i>Manure management</i>		
MMS CH ₄	6,085,233	738,494
MMS – direct N ₂ O	215,945	158,687
MMS – Atmos. deposition N ₂ O	293,036	20,352
<i>Waste applied to soil</i>		
Soil – direct N ₂ O	294,234	546,534
Soil – leaching & runoff N ₂ O	45,790	85,054
<i>Offsets</i>	0	0
Total On-farm	7,895,228	1,953,425
Post-farm		
Pig freight	247,507	247,507
Meat processing	907,825	907,825
Exported manure	331,305	183,866
Total Post-farm	1,486,637	1,339,198
Dressed weight sold - HSCW (kg/yr)	2,269,562	2,269,562
Carbon footprint	(kg CO₂-e / kg HSCW)	(kg CO₂-e / kg HSCW)
Pre-farm	0.92	0.89
On-farm	3.48	0.86
Post-farm	0.66	0.59
Total	5.05	2.34



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