

# PigGas Report 6 – 1,043 sow, farrow to finish, conventional piggery, NSW. September 2013

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## Production details

This is a large family owned conventional piggery. Breeding and growing pigs are housed on one site in seven naturally ventilated sheds. Pigs are sold at a range of weights for both domestic and export markets at an average of 120 kg live weight.

## Feed consumption

Most feed ingredients are purchased and milled off-site. Normal piggery cereal-based feedstuffs are supplemented with waste by-products from other industries. Total feed consumed is 7,486 t/yr.

## Sales/Transfers

22,825 pigs leave the piggery each year. This comprises 3,432 weaners which are transferred to another piggery for growing and finishing, 1,300 heavy finishers which are transferred as gilts to another piggery and 18,093 heavy finishers which are sold for slaughter.

## Waste management systems

Manure is automatically flushed from each shed in underfloor drains to a newly commissioned 8.5 ML covered anaerobic pond. Methane from this pond is captured and burnt to generate electricity for the site and to feed electricity into the grid.

Treated effluent and pond sludge is pumped to three Sedimentation and Evaporation Ponds (SEPS) which are dried out and desludged annually. The overflow from the SEPS is pumped to holding ponds.

## Manure reuse systems

Sludge from the SEPS is dried and solids are spread on crops and pastures.



Effluent from the holding ponds is regularly irrigated to large areas of pastures for sheep and cattle grazing and to cropping areas. Total property area is 3,950 ha with about 450 hectares cropped with triticale, barley, lupins and silage canola.

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## On-Farm Baseline Emissions

Original annual emissions prior to building the covered pond and electricity generation were **9,788 tonnes CO<sub>2</sub>-e/yr** with an emissions intensity of **5.31 kg CO<sub>2</sub>-e/kg HSCW**.

Following installation of the covered pond and electricity generation, the baseline emissions for this piggery total **2,068 tonnes CO<sub>2</sub>-e/yr** with an emissions intensity of **1.12 kg CO<sub>2</sub>-e/kg HSCW**, a 79% reduction.

This calculation includes the destruction of pond methane and replacement electricity generated for the site, but no excess electricity sales to the grid. This will occur following full functioning of the pond system. It is also planned to recover heat from the engine for piped hot water heating of suckers and weaner pig accommodation on site.

## On-Farm Emissions Reduction Scenario

There are three options to reduce emissions. The first is to reduce feed wastage of the gilts, grower pigs and finisher pigs (15% to 10%) through better adjustment and management of individual feeders. The second is to account for the excess generation of electricity sold into the grid over and above the site demand. The third is to replace LPG energy used to heat suckers and weaner pigs. Genset engine heat will be recovered to heat water for this purpose.

This scenario (see table below) reduced on-farm emissions **from 2,068 t/yr to 1,689 t/yr** and reduced kg CO<sub>2</sub>-e/kg HSCW **from 1.12 to 0.92 (18% reduction)**.

The piggery owners are currently investigating the process of becoming a Recognised Offset Entity with the Clean Energy Regulator to enable them to apply for a project under the CFI Methodology “Destruction of methane from manure in piggeries”.



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## Annual Greenhouse Gas Emissions Profile (calculated using PigGas)

Emissions	Current Emissions Baseline (kg CO <sub>2</sub> -e/yr)	Reduction Scenario (kg CO <sub>2</sub> -e/yr)
<b>Pre-farm</b>		
Grain	1,871,559	1,871,559
Milling & delivery	359,339	359,339
Pig freight	1,079	1,079
Straw & bedding		
<b>Total Pre-farm</b>	<b>2,231,977</b>	<b>2,231,977</b>
<b>On-farm</b>		
<i>Fuels &amp; energy</i>		
Purchased electricity	548,833	548,833
Fuel - stationary	62,766	0
Fuel - transport	4,182	4,182
<i>Enteric CH<sub>4</sub></i>	253,219	253,219
<i>Manure management</i>		
MMS CH <sub>4</sub>	901,228	750,956
MMS – direct N <sub>2</sub> O	69,144	65,227
MMS – Atmos. deposition N <sub>2</sub> O	0	0
<i>Waste applied to soil</i>		
Soil – direct N <sub>2</sub> O	690,750	651,616
Soil – leaching & runoff N <sub>2</sub> O	86,776	81,859
<b>Total On-farm</b>	<b>2,068,065</b>	<b>1,689,293</b>
<b>Post-farm</b>		
Pig freight	150,114	150,114
Meat processing	750,191	750,191
Exported manure		
<b>Total Post-farm</b>	<b>900,305</b>	<b>900,305</b>
<b>Dressed weight sold - HSCW (kg/yr)</b>	<b>1,964,312</b>	<b>1,964,312</b>
<b>Carbon footprint</b>	<b>(kg CO<sub>2</sub>-e / kg HSCW)</b>	<b>(kg CO<sub>2</sub>-e / kg HSCW)</b>
Pre-farm	1.21	1.21
<b>On-farm</b>	<b>1.12</b>	<b>0.92</b>
Post-farm	0.49	0.49
<b>Total</b>	<b>2.82</b>	<b>2.57</b>



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