

PigGas Report 55 – 1,145 sow, farrow to finish, multisite, conventional and deep litter piggery, NSW.

May 2015



Production details

This is a large family owned piggery on two sites. Site 1 contains all breeding stock and about one third of all weaners, growers and finishers in flushed conventional sheds. The weaners and lactating sows are housed in climate controlled sheds while the growers, finishers, gilts and dry sows are housed in naturally ventilated sheds. On site 2, the weaner pigs are housed in straw-based deep litter naturally ventilated sheds, while the growers and finishers are housed in naturally ventilated conventional flushed buildings. Pigs are sold mainly into domestic fresh pork markets at an average of 98 kg live weight.



Feed consumption

Approximately 50% of feed grain used in the piggery is grown on-site. All feed rations are milled off-site and transported to the piggery. The total feed consumed is 7,227 t/yr.



Sales/Transfers

Net pig sales are 24,317 pigs/yr with a total dressed weight of 1,945 t/yr.

Waste management systems

Manure is flushed from each conventional shed in underfloor drains to primary anaerobic lagoons at each site. From the primary ponds, effluent flows to secondary treatment ponds at each site followed by tertiary recycle/storage/evaporation ponds. For the weaner sheds at Site 2, fresh straw is added to each shed at the beginning of each batch of weaner pigs and spent litter is removed following each batch and stockpiled.



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Manure reuse systems

Sludge plus the majority of effluent from the primary and secondary ponds at each site, is removed annually by vacuum tanker and spread onto cropping land. Stockpiled spent litter from the weaner sheds and composted carcasses are also spread to cropping land. Total property area is 1,900 ha which is used to grow mainly wheat, barley, and canola in rotation with sheep grazing.



On-Farm Baseline Emissions

The current baseline emissions for this piggery total **7,065 tonnes CO₂-e/yr** with an emissions intensity of **3.63 kg CO₂-e/kg HSCW**.

On-Farm Emissions Reduction Scenario

Like most conventional piggeries with anaerobic ponds, the majority of emissions on this piggery (76%) come from anaerobic pond methane.

The emissions reduction scenario discussed with the owner was to construct a new covered primary anaerobic pond at site 1 only and use collected biogas methane to generate electricity for the site. Site 1 houses about 60% of the pigs but uses 90% of the total electricity, mainly for fan ventilation and heating small pigs.

This scenario (see table below) reduced on-farm emissions **from 7,065 t/yr to 4,202 t/yr** and reduced kg CO₂-e/kg HSCW **from 3.63 to 2.16 (41% reduction)**.

The piggery owner is currently unsure of the financial viability of the potential project and was advised to seek further expert assistance to evaluate its feasibility.



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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	1,806,684	1,806,684
Milling & delivery	346,883	346,883
Pig freight	1,079	1,079
Straw & bedding	11,000	11,000
Total Pre-farm	2,165,646	2,165,646
On-farm		
<i>Fuels & energy</i>		
Purchased electricity	547,234	47,268
Fuel - stationary	26,439	26,439
Fuel - transport	13,491	13,491
<i>Enteric CH₄</i>	258,510	258,510
<i>Manure management</i>		
MMS CH ₄	5,381,392	3,003,966
MMS – direct N ₂ O	165,869	165,869
MMS – Atmos. deposition N ₂ O	253,604	142,566
<i>Waste applied to soil</i>		
Soil – direct N ₂ O	371,962	483,000
Soil – leaching & runoff N ₂ O	46,728	60,677
<i>Offsets</i>	0	0
Total On-farm	7,065,228	4,201,785
Post-farm		
Pig freight	35,860	35,860
Meat processing	778,320	778,320
Exported manure		
Total Post-farm	814,180	814,180
Dressed weight sold - HSCW (kg/yr)	1,945,232	1,945,232
Carbon footprint	(kg CO₂-e / kg HSCW)	(kg CO₂-e / kg HSCW)
Pre-farm	1.11	1.11
On-farm	3.63	2.16
Post-farm	0.42	0.42
Total	5.16	3.69



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