

# PigGas Report 52 – 285 sow, farrow to pork, conventional piggery, NSW.

February 2015



## Production details

This is a family owned conventional piggery. All pigs are housed in ten conventional naturally ventilated and fan ventilated sheds. Pigs are sold into the domestic market to private butchers at a range of light pork and pork weights from 14 kg to 78 kg live weight.

## Feed consumption

All pig feeds are purchased off-site from a commercial feed mill and delivered to the piggery as dry feed rations for the different classes of pigs. Total feed consumed by all pigs is 1,382 t/yr.

## Sales/Tranfers

6,292 pigs/yr are sold with a total dressed weight of 295 t/yr.

## Waste management systems

All sheds have underfloor and open drains flushed and hosed with fresh water. Effluent from the sheds drains to three primary anaerobic treatment ponds which are followed by two secondary treatment ponds and a large tertiary storage/irrigation pond.



## Manure reuse systems

The effluent from the final storage pond is regularly flood irrigated to mixed pasture crops which are cut and baled for hay for more than 10 months of the year. Some effluent is irrigated to a small area of pasture grazed by cattle. Every 8 – 10 years, pond sludge is removed by excavator, dried and spread on pasture cropping land. Some sludge is also removed by vacuum tanker and spread occasionally on pastures.





The total area of land available for pasture cropping is 220 ha. Pastures grown are lucerne, ryegrass and liverseed which are cut for hay and some native pasture species which are grazed.

### On-Farm Baseline Emissions

The current baseline emissions for this piggery total **1,880 tonnes CO<sub>2</sub>-e/yr** with an emissions intensity of **6.37 kg CO<sub>2</sub>-e/kg HSCW**.

### On-Farm Emissions Reduction Scenario

To maximize the fertiliser value of effluent and sludge in the cropping program, the owners are planning to take the pond system off-line. Flushed effluent and solids will be collected in 3 or 4 new sumps at the end of groups of sheds. The sumps will be pumped out daily to flood irrigate pastures cut for hay. In this way the phosphorus, which normally settles in the sludge over a 10 year period, will be available to crops daily. In addition, the nitrogen fertiliser value of the raw effluent will be higher due to lower volatilisation compared with the pond treated effluent. The elimination of the anaerobic pond treatment will greatly reduce methane production from the manure management system.

The scenario modelled was to replace the anaerobic pond treatment system with daily spreading of untreated effluent to pastures.

This scenario (see table below) reduced on-farm emissions **from 1,880 t/yr to 301 t/yr** and reduced kg CO<sub>2</sub>-e/kg HSCW **from 6.37 to 1.02 (84% reduction)**.

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

Emissions	Current Emissions Baseline	Reduction Scenario (kg CO <sub>2</sub> -e/yr)
<b>Pre-farm</b>		
Grain	345,478	345,478
Milling & delivery	66,332	66,332
Pig freight	0	0
Straw & bedding	0	0
<b>Total Pre-farm</b>	<b>411,810</b>	<b>411,810</b>
<b>On-farm</b>		
<i>Fuels &amp; energy</i>		
Purchased electricity	85,983	85,983
Fuel - stationary	13,098	13,098
Fuel - transport	0	0
<i>Enteric CH<sub>4</sub></i>	46,836	46,836
<i>Manure management</i>		
MMS CH <sub>4</sub>	1,580,255	8,779
MMS – direct N <sub>2</sub> O	13,063	0
MMS – Atmos. deposition N <sub>2</sub> O	52,252	9,144
<i>Waste applied to soil</i>		
Soil – direct N <sub>2</sub> O	78,247	121,485
Soil – leaching & runoff N <sub>2</sub> O	9,830	15,262
<i>Offsets</i>	0	0
<b>Total On-farm</b>	<b>1,879,564</b>	<b>300,587</b>
<b>Post-farm</b>		
Pig freight	20,104	20,104
Meat processing	118,023	118,023
Exported manure	0	0
<b>Total Post-farm</b>	<b>138,127</b>	<b>138,127</b>
<b>Dressed weight sold - HSCW (kg/yr)</b>	<b>295,058</b>	<b>295,058</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	1.40	1.40
<b>On-farm</b>	<b>6.37</b>	<b>1.02</b>
Post-farm	0.47	0.47
<b>Total</b>	<b>8.23</b>	<b>2.88</b>