Government of Western Australia
Department of Environment Regulation

Licence

Licence Number	L6876/1989/12
Licensee	GD Pork Holdings Pty Ltd (ACN 126 978 676)
Registered business address	Level 3, 35 Outram Street WEST PERTH WA 6005
Duration	20/10/2012 to 19/10/2024
Prescribed Premises	Category 2 - intensive piggery: premises on which pigs are fed, watered, and housed in pens
Premises	Australind Piggery 96 Rosamel Road PARKFIELD WA 6233 Lot 2 on Diagram 76597

This amended Licence is granted to the Licensee, subject to the following conditions, on 23 June 2016 by:

Jonathan Bailes
Manager Licensing (Process Industries)

an officer delegated under section 20 of the Environmental Protection Act 1986 (WA)

Conditions

Environmental compliance

1. The ***Licensee*** must comply with the ***EP Act*** and all regulations prescribed under the EP Act applicable to the ***Premises***, including:

(a) the duties of an occupier under s 61;

(b) the duty to notify the ***CEO*** of ***discharges*** of ***waste*** under s 72; and

(c) not causing, or doing anything that is likely to cause, an offence under the EP Act,

except where the Licensee does something in accordance with a ***condition*** which expressly states that a defence under s 74A of the EP Act may be available.

Notification of Material Change

2. The Licensee must notify the ***CEO*** of any ***Material Change*** within 14 days of a ***Material Change*** occurring and such notification (which the ***CEO*** will make publicly available) must:

(a) be in writing;

(b) include details of the changes, including duration, infrastructure details (if any); and

(c) include risk analysis of the changes, including proposed controls to mitigate risks.

Nothing in this condition constitutes a defence to offences under the EP Act.

3. The Licensee must provide to the ***CEO*** any additional information the ***CEO*** may reasonably require to assess the ***Material Change*** under Condition 4 and in order for the ***CEO*** to determine if an amendment is required under the EP Act.

4. The Licensee must cease carrying out, or modify, a ***Material Change*** in the manner and at the time required by the ***CEO*** if:

(a) the ***CEO*** forms the view, acting reasonably, that the ***Material Change*** has or may have an unacceptable impact on public health, amenity or the environment; and

(b) the ***CEO*** has provided written notice (which the ***CEO*** will make publicly available) to the Licensee specifying the grounds for the ***CEO***'s views.

Nothing in this condition prevents the Licensee subsequently submitting an amendment in relation to the ***Material Change***.

Works

5. The Licensee must carry out the Works within the Premises in accordance with the requirements set out in Schedule 3 to this Licence.

6. The Licensee must locate the Works generally in accordance with the site plans in Schedule 1 to this Licence.

7. Subject to Condition 10, at least 10 business days prior to the commencement of the Works, the Licensee must provide to the ***CEO*** engineering or building certification from a suitably qualified professional confirming that the detailed construction drawings and plans for the Works include each item of infrastructure or component of infrastructure specified in column 1 with the requirements specified in column 2, as set out in the Works Infrastructure Requirements Table.

8. Subject to Condition 10, on completion of the Works, the Licensee must provide to the ***CEO*** engineering or building certification from a suitably qualified professional confirming each item of infrastructure or component of infrastructure specified in column 1 with the requirements specified in column 2, as set out in the Works Infrastructure Requirements Table have been constructed with no material defects.

9. The Licensee must not depart from the requirements specified in column 2 of the Works Infrastructure Requirements Table except:

(a) where such departure does is minor in nature and does not materially change or affect the infrastructure;

(b) or where such departure improves the functionality of the infrastructure and does not increase risks to public health, public amenity or the environment; and all other conditions in this Licence are still satisfied.

10. If Condition 9 applies, then the Licensee must provide the ***CEO*** with a list of departures which are certified as complying with Condition 9 at the same times, and from the same professional, as the certifications required under Conditions 8 and 9.

11. The Licensee must ensure that each item of infrastructure or equipment specified in Column 1 is designed and constructed in accordance with the requirements specified in column 2, as set out in the Works Infrastructure Requirements Table.

Works Infrastructure Requirements Table	
Column 1	**Column 2**
Infrastructure	**Requirements (design and construction)**
All	All piggery infrastructure must be located at least 50m from geomorphic wetlands. *The distance from infrastructure must be calculated from the outer perimeter of any embankment or physical building.*
Accommodation Sheds	The piggery sheds must be designed and constructed so as to meet the following specifications: (a) All new sheds must be fully enclosed with mechanical ventilation; (b) Intensive sheds must comprise slatted floors and contain a feeding system to all animals within the shed; (c) Intensive sheds must employ pull and plug systems, comprising of impermeable, corrosion-resistant, and sturdy underfloor pits, and a 250m^3 covered concrete collection sump; (d) The Licensee must ensure that all wastewater and slurry from the intensive piggery sheds is directed to the wastewater treatment plant by 300mm diameter impermeable PVC piping; and (e) Feed dispensers from the floor, creeps, or feeders.
Waste storage and treatment areas	The Licensee must ensure that all ***waste*** storage and treatment areas are constructed from impermeable and bunded concrete ***hardstand***.

Works Infrastructure Requirements Table	
Column 1	**Column 2**
Infrastructure	**Requirements (design and construction)**
Waste Treatment Plant	Following construction and commissioning of the Waste Treatment Plant, certification must be provided from a suitably qualified professional that: (a) the plant has no major operational defects; and (b) is fit for the purpose intended being the treatment of ***waste*** from the maximum number of ***SPU***s to be held on the premises.
Biogas transport and flaring	(a) A flare and engine must be installed for the combustion of biogas generated by the WTP. (b) The flare and engine must be designed, constructed and sited in accordance with the *Code of Practice for On-farm Biogas Production and Use (Piggeries)* Australian Pork Limited (2015), APL Project 2011/1013.423 inclusive of: (i) biogas transfer pipelines and fittings; and (ii) biogas conditioning prior to combustion. (c) The biogas flare and engine design specifications must include: (i) a rated capacity to safely combust all biogas in storage under the domes of the anaerobic digesters; (ii) a measurement device to monitor the operational status of the flare during periods when the flame is invisible; and (iii) a flowmeter to monitor the quantity of biogas sent to the flare and engine. (d) The design and construction of the flare and engine, including any ancillary components, must be completed by a suitably qualified professional.
Decommissioning of existing wastewater ponds	During the decommissioning of the three existing wastewater ponds, desludging must not breach the pond embankment or pond lining or result in any ***effluent*** runoff.

Infrastructure and Equipment

12. The Licensee must ensure that the infrastructure and equipment specified in column 1 of the Infrastructure Controls Table are maintained and operated in accordance with the requirements specified in column 2 of the Infrastructure Controls Table.

13. The Licensee must ensure that the infrastructure and equipment in the Infrastructure Controls Table are maintained in good working order.

14. The Licensee must ensure that on completion of the Works specified in Condition 2 of this Licence, the number of animals on the site does not exceed 15,916 animals.

Infrastructure Controls Table				
	Controls for odour			
	Site Infrastructure	**Description**	**Operation details**	**Reference to Premises Plan (Schedule 1)**
1.	Waste Treatment Plant (WTP)	The WTP is made up of a number of components including ***waste*** storage areas, a shredder, mixer/digester, evaporation tanks, and biogas reuse system. The WTP ***effluent*** collecting pit is covered.	WTP is operational continuously, and anaerobic ***waste*** treatment occurs in enclosed tanks. Combustion of biogas to destroy odour.	Site Plan Wastewater Treatment Plant Plan
2.	Biogas use equipment and biogas transport and flaring	Internal combustion engines and a backup flare	Cleaned biogas is used to produce electricity and heat or is combusted by the backup flare	Wastewater Treatment Plant Plan
3.	Intensive and extensive accommodation sheds	Enclosed sheds with automatic mechanical ventilation system known as tunnel ventilation Extensive sheds consist of flooring and two side walls with a tarpaulin cover	Occupied sheds are regularly cleaned ***Effluent*** pits in intensive sheds are 'pulled' daily for continuous inflow into ***effluent*** collection pit Fans in one end of intensive sheds pull air from the other end, creating a drop in temperature by the addition of water resulting in evaporative cooling	Site plan
	Controls for combustion gases			
	Site Infrastructure	**Description**	**Operation details**	**Reference to Premises Plan (Schedule 1)**
4.	Biogas use equipment and biogas transport and flaring	The biogas reuse plant is part of the WTP	Cleaned biogas is combusted in engines or a backup flare Quality and production of biogas measured daily	Wastewater Treatment Plant Plan

	Controls to minimise groundwater and surface water impacts	
	Site Infrastructure	**Description**

5.	WTP and accommodation sheds	New and existing infrastructure controls are outlined in the Environmental Management Plan. These include:
		• plug and pull system ***effluent*** system and underfloor pits with contingency storage for 30 days;
		• enclosed ***effluent*** sump with three days capacity;
		• ***Effluent*** transported in PVC pipes;
		• bunded concrete area for spent litter and pressed manure storage with a capacity of 20m^3;
		• WTP located on concrete platform consisting of impervious:
		  ○ 50m^3 feeding tank; and
		  ○ Two enclosed 1,976m^3 digesters
		• concrete floor and side walls for extensive sheds; and
		• water supply in extensive sheds located on inner walls to ensure any spills are captured in the deep litter.

Groundwater Monitoring and Reporting

15. The Licensee must undertake the monitoring in the Monitoring Requirements Table according to the specifications in that table.

Monitoring Requirements Table				
Monitoring of ambient groundwater quality				
Monitoring point reference and location on premises map	**Parameter**	**Units**	***Averaging period***	**Frequency**
MB1 – MB3	Standing water level[1]	m(***AHD***) ***mBGL***	***Spot sample***	Six monthly
	pH[1]	-		
	Total dissolved solids	mg/L		
	Total nitrogen			
	Total phosphorus			
	Total acidity			
	Total alkalinity			
	Dissolved metals			
	Sulfate			
	Chloride			
	Electrical conductivity[1]	µS/cm		

Note 1: In-field non-NATA accredited analysis permitted.

16. The Licensee shall ensure that:

(a) all water samples are collected and preserved in accordance with ***AS/NZS 5667.1***;

(b) all groundwater sampling is conducted in accordance ***with AS/NZS 5667.11***; and

(c) all laboratory samples are submitted to and tested by a laboratory with current ***NATA*** accreditation for the parameters being measured unless indicated otherwise in the Monitoring Requirements Table.

17. The Licensee must ensure that six monthly monitoring is undertaken at least five months apart.

18. The Licensee must provide a report to the ***CEO*** specifying the data from the monitoring undertaken in Condition 17 in the form and at the times specified in Schedule 4.

Emissions

19. The Licensee must not cause any emissions from the Premises except for Specified Emissions and General Emissions described in column 1, subject to the exclusions, limitations, or requirements specified in column 2 of the Emissions Table below.

If the Licensee proves that it has acted in accordance with this condition, it may be a defence under s 74A of the EP Act to proceedings for offences under the EP Act (including offences under section 56).

Emissions Table	
Column 1	**Column 2**
Emission Type	**Exclusions/Limitations/Requirements**
Specified Emissions	
Combustion gases	Subject to compliance with: • Rows 2 and 4 of the Infrastructure Controls Table; and • Condition 13
General Emissions (excluding Specified Emissions)	
Emissions which: • arise from the activities on the Premises arising from matters set out in, or incidental to the matters set out in, the ***General Description*** in Schedule 2; or • arise from the activities on the Premises arising from activities arising from a ***Material Change*** (except where Condition 4 applies).	Emissions excluded from General Emissions are: • ***unreasonable emissions***; or • emissions that result in, or are likely to result in, ***pollution, material environmental harm*** or ***serious environmental harm;*** or • discharges of ***waste*** in circumstances likely to cause ***pollution***; or • emissions that result, or are likely to result in, the ***discharge*** or abandonment of ***waste*** in water to which the public has access; or • emissions or discharges which do not comply with an ***approved policy***; or • emissions or discharges which do not comply with prescribed standard; or • emissions or discharges which do not comply with the conditions in an ***implementation agreement or decision***; or • emissions or discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004*.

Information

20. The Licensee must maintain accurate records including information, reports and data in relation to:

(a) the calculation of fees payable in respect of this ***Licence***; and

(b) any ***Material Change***.

21. If an emission the type referred under Condition 19 occurs on the Premises, then the Licensee must:

(a) investigate why the emission occurred;

(b) take all reasonable steps to prevent the emission occurring again;

(c) record the details of the investigation and all steps taken; and

(d) provide a copy of the record to the ***CEO*** within 21 days of the date Licensee became aware emission occurred.

22. The Licensee must record the number and details of any complaints received by the Licensee relating emissions and discharges from the Premises, and any action taken by the Licensee in response to the complaint. Details of complaints must include:

(a) an accurate record of the concerns or issues raised, for example, a copy of any written complaint or a written note of any verbal complaints made;

(b) the name and contact details of the complainant, if provided by the complainant;

(c) the date of the complaint; and

(d) the details and dates of the actions taken by the Licensee in response to the complaints.

23. The Licensee must submit to the ***CEO*** within 30 days after the ***Annual Period*** a ***Compliance Report*** indicating the extent to which the Licensee has complied with the Conditions in this Licence for the ***Annual Period***.

24. The Licensee must comply with a ***CEO Request***, within 7 days from the date of the ***CEO*** Request or such other period specified in the ***CEO*** Request.

Definitions and Interpretation

Definitions

In this Licence, the following terms have the following meanings:

AHD means the Australian height datum.

AS/NZS 5667.1 means the Australian Standard AS/NZS 5667.1 Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.

AS/NZS 5667.11 means the Australian Standard AS/NZS 5667.11 Water Quality – Sampling – Guidance on sampling of groundwaters.

Averaging period means the time over which a limit is measured, or a monitoring result is obtained;

Annual Period means the inclusive period from 1 October until 30 September in the following year;

CEO for the purposes of notification means:

Chief Executive Officer
Department of Environment Regulation
Locked Bag 33 Cloisters Square
Perth WA 6850
info@der.wa.gov.au

CEO Request means a request made by the ***CEO*** to the Licensee in writing, sent to the Licensee's address for notifications, as described at the front of this Licence, in relation to:

(a) information, records or reports in relation to specific matters in connection with this Licence including in relation to compliance with any Conditions and the calculation of fees (whether or not a breach of a condition or the EP Act is suspected); or

(b) reporting, records or administrative matters:

(i) which apply to all Licences granted under the EP Act; or

(ii) which apply to specified categories of Licences within which this Licence falls.

Compliance Report means a report in the format specified by the ***CEO*** from time to time.

Condition means a condition to which this Licence is subject under s 62 of the EP Act.

Discharge has the same meaning given to that term under the EP Act.

Effluent means the liquid by-product stream comprising of wastewater, spilt/leaked drinking water, manure and waste feed.

Emission has the same meaning given to that term under the EP Act.

Environmental harm has the same meaning given to that term under the EP Act.

EP Act means the *Environmental Protection Act 1986* (WA).

General Description means the description of activities and operations carried out on the Premises as set out in Schedule 2 of this Licence.

Hardstand means a surface with a permeability of 10^{-9} metres/second or less.

Licence refers to this document, which evidences the grant of Licence by the CEO under s 57 of the EP Act, subject to the Conditions.

Licensee refers to the occupier of the premises being the person to whom this Licence has been granted, as specified at the front of this Licence.

mBGL means metres below ground level.

NATA means the National Association of Testing Authorities, Australia.

NATA accredited means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis.

Material Change means a change to the activities carried out on the Premises as described in the General Description set out in Schedule 2 and:

(a) that may result in an increased risk to public health, amenity or the environment; and

(b) includes the types of changes specified in Schedule 2; and

(c) does not include the excluded changes specified in Schedule 2.

Material environmental harm has the same meaning given to that term under the EP Act.

Pollution has the same meaning given to that term under the EP Act.

Premises refers to the premises to which this Licence applies, as specified at the front of this Licence and as shown on the map in Schedule 1 to this Licence.

Serious environmental harm has the same meaning given to that term under the EP Act.

Spot sample means a discrete sample representative at the time and place at which the sample is taken.

Standard Pig Unit (SPU) has the meaning as defined in the National Environmental Guidelines for Piggeries – Second Edition 2010, Australian Pork Limited.

Unreasonable emission has the same meaning given to that term under the EP Act.

Waste has the same meaning given to that term under the EP Act.

Interpretation

In this Licence:

(a) the words ‘including’, ‘includes’ and ‘include’ will be read as if followed by the words ‘without limitation’;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

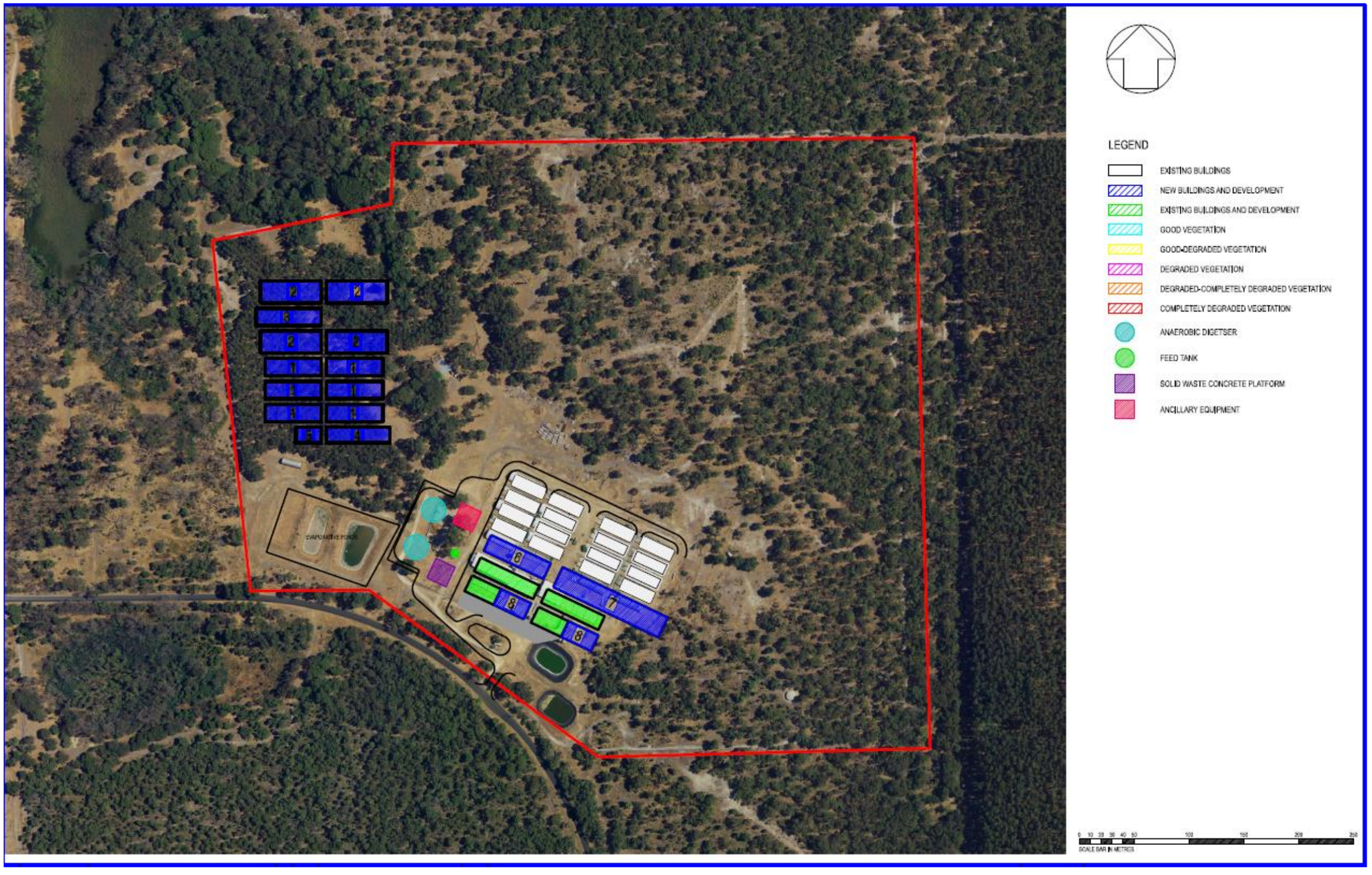
(c) where tables are used in a Condition, each row in a table constitutes a separate Condition; and

(d) any reference to an Australian or other standard, guideline or code of practice in this Licence means the version of the standard, guideline or code of practice in force at the time of granting of this Licence and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Licence.

Schedule 1: Plans

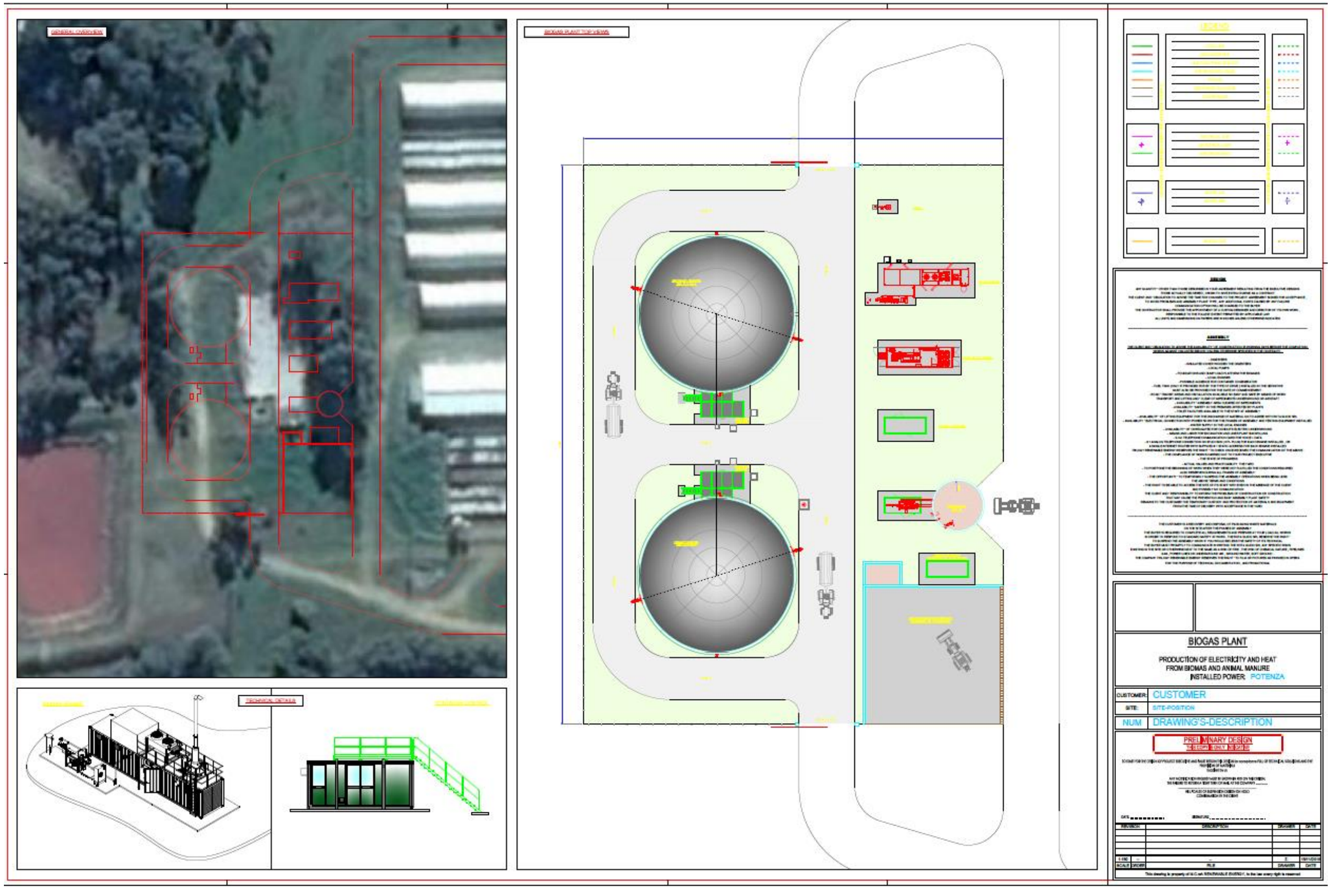
Premises Plan

The Premises are shown in the plan below. The red line depicts the boundary to the Premises.



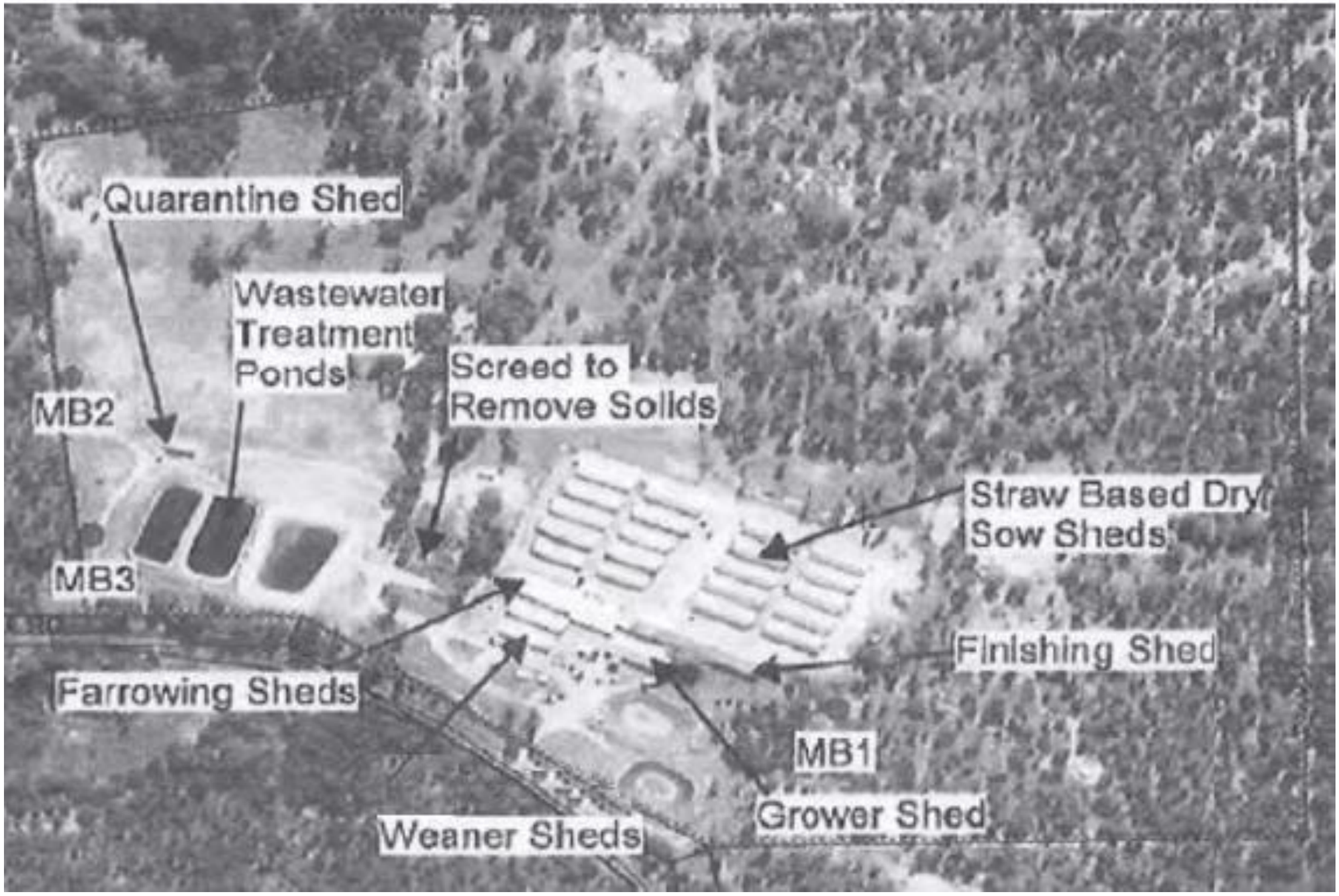
Wastewater Treatment Plant Plan

The WTP is shown in the plan below.



Existing Site Plan

The premises at the time of assessment is shown in the plan below.



Schedule 2: General Description

At the time of assessment, the following activities and operations were considered in the determination of the risk and related conditions for the Premises.

The activities on the Premises constitute those activities prescribed in Schedule 1 of the *Environmental Protection Regulations 1987* as Category 2 – intensive piggery: premises on which pigs are fed, watered, and housed in pens.

The maximum number of animals permitted on the Premises is 15,916 animals, which is equivalent to 11,800 SPU.

Infrastructure and equipment

The following infrastructure and equipment are situated on the Premises:

	Infrastructure	Plan reference
1	Twenty deep straw bedding extensive sheds	Plan: Existing Site Plan
2	Three evaporation ponds	Plan: Existing Site Plan
3	Solids separator	Plan: Existing Site Plan

The following infrastructure and equipment will be removed from the Premises:

	Infrastructure	Plan reference
1	Four deep straw bedding extensive sheds	Plan: Premises Plan
2	Three evaporation ponds	Plan: Existing Site Plan
3	Solids separator	Plan: Existing Site Plan

The following infrastructure and equipment are proposed on the Premises:

	Infrastructure	Plan reference
1	Sixteen mechanically ventilated production (intensive) sheds	Plan: Premises Plan
2	Waste treatment plant (WTP) consisting of: • covered concrete collection sump (250m3); • feed tank (50m3; steel and epoxy glass); • primary digester tank (1,976 m3; insulated steel and epoxy glass); • secondary digester tank (1,976 m3; insulated steel and epoxy glass); • evaporation tank (100m3, steel); • solids storage bed; and • biogas plant.	Plan: Premises Plan Plan: Wastewater Treatment Plant Plan

Site layout

The infrastructure and equipment are set out on the Premises in accordance with the site layout specified on the plans in Schedule 1.

Examples of Material Change

- changes in the maximum number of ***SPU***s held exceeding 10%;
- changes to the control or ownership of the infrastructure or equipment within the premises;
- removal of infrastructure and equipment; and
- changes to the site layout of infrastructure and equipment specified on the plans in Schedule 2.

Non-Material Change

- Improvements or additions to infrastructure and equipment that decrease the risk of emissions and discharges.

Schedule 3: Works

The Works to be carried out on the Premises are specified in the table below:

Item	Works	Specifications/Drawings
1	Intensive Sheds	Insulated, fully enclosed, standard colorbond surfmist buildings, column (side wall) height 2.2 m above floor level, insulated roof/ceiling with 20-degree pitch. Penning of different size inside sheds depending on type of animals. Mechanical ventilation with air cooling. Feeding from floor, creeps or feeders depending on class of pigs. • 6 production sheds for pigs each 760 m2 (total 4,560 m2) (Shed type 1) • 4 production sheds for pigs each 1,050 m2 (total 4,200 m2) (Shed type 2) • 1 production shed for pigs 850 m2 (total 850 m2) (Shed type 3) • 1 production shed for pigs 760 m2 (total 760 m2) (Shed type 4) • 1 production shed for pigs 890 m2 North of existing "farrowing shed" (replacing two existing straw based sheds, total of 890 m2) (Shed type 6) • 1 production shed for pigs 2,000 m2 North of existing "farrowing shed" (replacing two existing straw based sheds, total 2,000 m2) (Shed type 7) • 1 production shed for pigs 450 m2 placed East of existing short "farrowing shed (total 450 m2) (shed type 8) • 1 production shed for pigs placed East of existing "mating" shed (total 450 m2) (shed type 8) Plan - Premises plan
2	Waste Treatment Plant	Initial collection tank (feeding tank) – constructed from steel and epoxy glass; total capacity 50m^3; available capacity 35m^3; shredder; ***effluent***/solids separator. Primary digester tank - diameter 22m; total height 6m; effective height 5.3m; available volume 1,976m^3; steel and epoxy glass; insulated; elastic gasometrical dome cover; ***effluent***/solids separator. Secondary digester tank - diameter 22m; total height 6m; effective height 5.3m; available volume 1,976m^3; steel and epoxy glass; insulated; elastic gasometrical dome cover; ***effluent***/solids separator. Total digester capacity – 3,951m^3. Estimated total time of retention of 31 days. Waterproof bed (for solids separated) with gutter, total capacity to store processed ***waste*** from 90 days. Evaporation tank will be minimum 100m^2. Gas treatment system; 1x340kW biogas engine; biogas combustion flare. 1 backup diesel engine. Plan - Waste Treatment Plant Plan

Schedule 4: Monitoring

Groundwater Monitoring Events

Locations

Locations MB1, MB2 and MB3 as shown on the Groundwater Monitoring Locations plan.

Groundwater Monitoring reporting periods

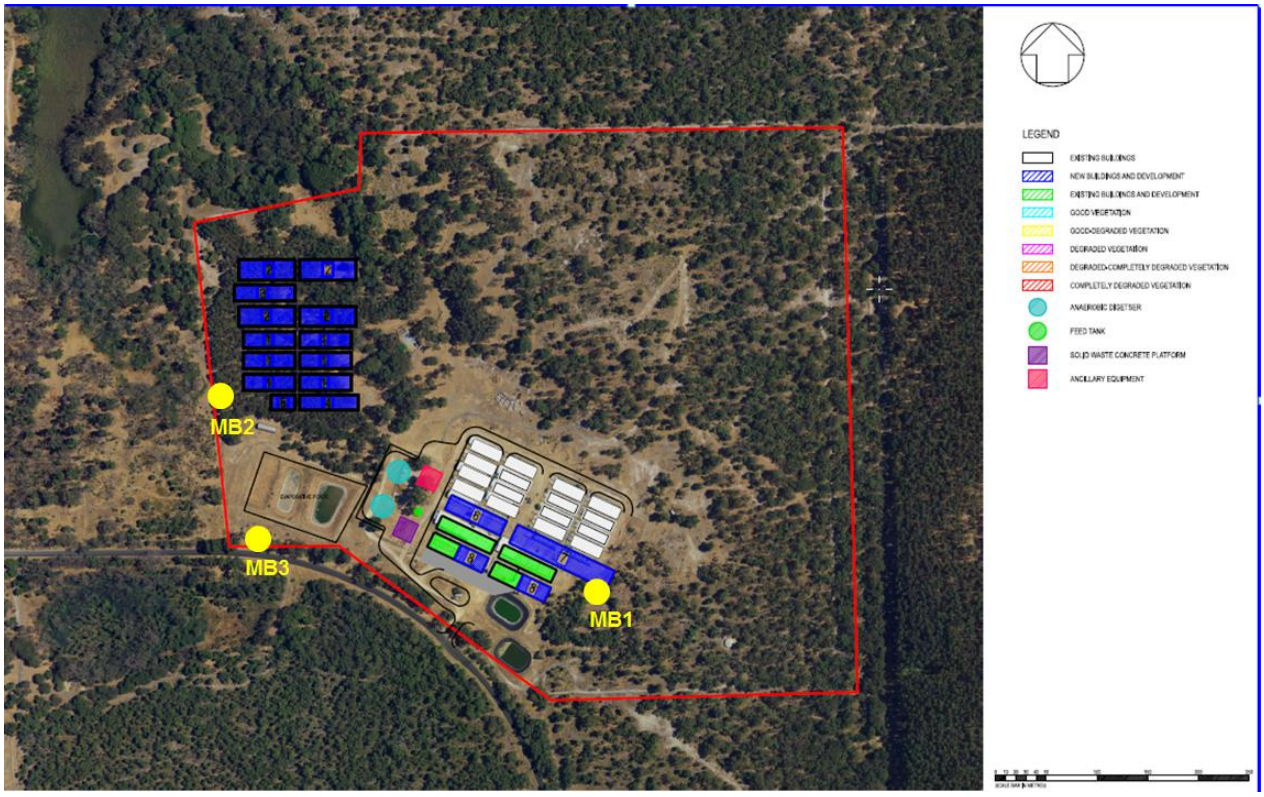
Reported annually to the ***CEO*** within 30 days of the end of the ***Annual Period***.

Groundwater Monitoring Report

The monitoring report must contain:

- the sampling or measurement date;
- the raw monitoring data for the sampling event in tabulated form; and
- time series graphical plots of the data generated from the earliest recorded data point.

Groundwater Monitoring Locations Plan



Government of Western Australia
Department of Environment Regulation

Decision Report

Application for Licence Amendment

Division 3, Part V *Environmental Protection Act 1986*

Applicant:	GD Pork Holdings Pty Ltd
ACN:	126 978 676
Licence Number:	L6876/1989/12
File Number:	DER2014/0001577
Premises:	GD Pork Australind 96 Rosamel Road, Parkfield AUSTRALIND 6233 Lot 2 on Diagram 76597 Certificate of Title Volume 1885 Folio 379
Date of report:	23 June 2016
Status of Report	Final

Table of Contents

Definitions of terms

Term	Definition
Applicant	GD Pork Holdings Pty Ltd
Assigned noise level	means noise level not to be exceeded at receiving premises, defined by Part 2, Division 1 of the *Environmental Protection (Noise) Regulations* 1997
AD	Anaerobic Digestion
CoP	*Code of Practice for On-farm Biogas Production and Use (Piggeries)* Australian Pork Limited (2015), APL Project 2011/1013.423
DAP	Development Assessment Panel
dB	decibel, a unit of measurement of sound level
EP Act	means the *Environmental Protection Act 1986*
NEGP	*National Environmental Guidelines for Piggeries* (Australian Pork Limited, 2010)
NEPM	*National Environmental Protection (Ambient Air Quality) Measure 2003*
Noise	means unwanted sound and is defined in the EP Act to include vibration of any frequency, whether transmitted through air or any other physical medium
Noise Regulations	*Environmental Protection (Noise) Regulations 1997*
Premises	As defined in the EP Act to mean residential, industrial, or other premises of any kind whatsoever and includes land, water and equipment
RIWI Act	Rights in Water And Irrigation Act 1914
Shire	Shire of Harvey
Southern JDAP	Southern Joint Development Assessment Panel
SPU	Standard Pig Unit
WAPC	Western Australian Planning Commission
WTP	Waste treatment plant

1. Background

GD Pork Holdings Pty Ltd (the Applicant) holds an existing Licence L6876/1989/12 for a category 2 premises under the *Environmental Protection Act 1986* (EP Act) for the GD Pork Australind facility (the Australind Piggery). The Applicant is seeking a licence amendment for an increase in production from 1,150 animals to 15,916 animals, which is equivalent to 11,800 Standard Pig Units (SPU). The proposed operations will involve two independent sow units and includes the construction of new intensive piggery sheds and the addition of a Waste Treatment Plant (WTP). The WTP will process the wastes created from the sheds including spent deep litter bedding, deceased animals, effluent, slurry, manure, and wastewater. The biogas produced within the WTP will be processed and combusted in engines for heat and power generation or in a flare.

2. Proposal

The Applicant has submitted the following documents and information in support of the application to amend the existing licence:

- Licence amendment Application Form dated 28 December 2015;
- A proposal document entitled GD Pork Australind Piggery Expansion Environmental Management Plan (EMP) Version 1, GD Pork Pty Ltd, including:
  - Appendix 1 – Supporting statement from Dr Kim Nairn, Veterinarian, Portec Veterinary Services;
  - Appendix 2 – Description of WTP;
  - Appendix 3 – SPU calculation plus separation distance calculations/figures;
  - Appendix 4 – Contingency plans; and
- Further information received regarding the WTP infrastructure and digester output dated 4 February 2016.

The information provided in February 2016 provided clarification about the WTP output. No material change to the application was made in this submission. This decision report is based on an assessment of the Applicant's Environmental Management Plan dated 20 November 2015, in addition to the further information received dated 4 February 2016 (the Final Application).

3. Overview of Australind Piggery

Australind Piggery is a sow-weaner-breeder operation and has both intensive and extensive pig accommodation. Currently, up to 1,150 animals can be housed intensively and approximately 7,323 animals can be housed extensively (a total of 8,473 animals, equivalent to 8,300 SPU). Piggery by-products are managed through the removal of spent deep litter bedding off-site, the channelling of effluent to a solids separation system before being directed into a pond treatment system, and on-site burial of carcasses.

3.1 Infrastructure

The existing and proposed infrastructure at Australind Piggery is detailed in Tables 1, 2, and 3 with reference to the plans contained in Schedule 1 of the amended licence.

Table 1: Australind Piggery Category 2 existing infrastructure

	Infrastructure	Plan reference
1	Twenty deep straw bedding extensive sheds	Plan: Existing Site Plan
2	Three evaporation ponds	Plan: Existing Site Plan
3	Solids separator	Plan: Existing Site Plan

Table 2: Australind Piggery Category 2 existing infrastructure to be demolished / decommissioned

	Infrastructure	Plan reference
1	Four deep straw bedding extensive sheds	Plan: Existing Site Plan
2	Three wastewater ponds	Plan: Existing Site Plan
3	Solids separator	Plan: Existing Site Plan

Table 3: Australind Piggery Category 2 proposed infrastructure

	Infrastructure	Plan reference
1	Sixteen mechanically ventilated production (intensive) sheds	Plan: Site Plan
2	WTP consisting of: • covered concrete collection sump (250m^3); • feed tank (50m^3; steel and epoxy glass); • primary digester tank (1,976m^3; insulated steel and epoxy glass); • secondary digester tank (1,976m^3; insulated steel and epoxy glass); • evaporation tank (100m^3, steel); • solids storage bed; and • biogas plant.	Plan: Site Plan Plan: Wastewater Treatment Plant Plan

3.2 Operational Aspects

The piggery will operate 24-hours a day, seven days a week, continuously throughout the year.

Both intensive (conventional) and extensive (deep litter bedding) sheds will be used for pig accommodation. Intensive pig production at the premises includes breeding, sows, and weaning. The upgraded premises will operate two independent sow units totalling 5,000 pigs. The pigs will be moved between different sheds according to their life-cycle stage.

Waste materials will be generated from the piggery operations. The Final Application includes a flow chart of the proposed waste treatment process at the Australind Piggery, as shown in Figure 1 below. The diagram shows how wastes will be stored, collected, and treated in the upgraded operations.

The WTP will use anaerobic digestion (AD) to process waste materials. AD is a natural breakdown of organic matter into carbon dioxide, methane, and water by microorganisms in the absence of oxygen.

Wastes will be treated in the WTP so that the various by-products can be utilised on the premises or off-site; this includes reuse of treated wastewater for piggery flushing and cleaning; combustion of biogas for electricity and heat; and the use of solid wastes as fertiliser. The waste management system will operate as a staged process including continuous waste collection, mixing and shredding, primary digestion, secondary digestion, biogas purification, and cogeneration of electricity and heat.

The intensive sheds will be insulated, enclosed, and have integrated flooring and drainage systems to prevent the ingress of storm water and the uncontrolled discharge of effluent, contaminated water, and solids. The Intensive sheds will be ventilated by an automatic ventilation system called tunnel ventilation. The system will operate automatically based on the internal and external temperatures. Fans pull air from one end of a shed to the other, and the addition of water creates evaporative cooling. Within the intensive sheds, animals will be fed twice a day automatically.

The existing extensive sheds are covered with tarpaulin and have an impermeable concrete flooring system and side walls to prevent seepage of waste outside of the shed system. The floors are covered with straw bedding to absorb manure and spilt drinking water and are cleaned out mechanically. Animals within the extensive sheds are able to access to food as they require.

Other solid wastes generated at the piggery include mortalities and after-birth.

The use of mobile equipment on site is variable, with handheld equipment, machinery, and trucks and light vehicles used throughout the working day.

Blue Box: Fully contained vessel, Red Box: Final termination point for treated waste
Green Arrow: Indicates moved with a loader, Orange Arrow: Indicates moved by pumping

Figure 1: Flow chart of waste generated from operation from Final Application

4. Legislative Context

4.1 Part IV of the EP Act

The Environmental Protection Authority (EPA) has not assessed the Australind Piggery proposal, and there is no Ministerial Statement relating to its construction or operation. The EPA's Guidance for the Assessment of Environmental Factors - Separation Distances between Industrial and Sensitive Land (Guidance Statement No. 3, June 2005) recommends that the buffer distance between an intensive piggery with more than 5,000 pigs and a sensitive land use should be 5,000m.

4.2 Applicable Part V Standards and Guidelines

In the context of this application, the National Environmental Guidelines for Piggeries – Second Edition, Australia Pork Limited 2010 (the NEGP) represent the most appropriate industry guidance when considering proposals for new intensive piggeries or expansions of existing intensive piggeries. This guideline supersedes the Western Australian Department of Agriculture and Food (DAFWA) publication Environmental Guidelines for New and Existing Piggeries (2000), which has been rescinded. DER has referred to the NEPG as the appropriate Industry Guideline during the assessment of this application.

4.3 Planning Approvals

Planning approval has been granted for the proposed expansion. An application was lodged with the Shire of Harvey (the Shire) on 18 December 2015. The Shire determined that a Development Assessment Panel (DAP) decision was required due to the application meeting the value threshold for a mandatory DAP assessment. The Shire processed the application in accordance with the Shire of Harvey District Planning Scheme No.1 and publically advertised the application from 1 January 2016 to 22 February 2016. Considering comments from public authorities and public submissions, the Shire prepared a report on the application recommending that the Southern Joint Development Assessment Panel (Southern JDAP) do not support the application. The Southern JDAP considered the application and approved the proposal on 27 April 2016. The approval is subject to conditions including one specifying that the planning approval is valid for a period of two years unless the proposal has substantially commenced (refer to Attachment 1).

4.4 Materially Related Environmental Approvals

The Applicant submitted a development proposal for a different piggery expansion at the Australind Piggery in 2013. The proposal was for a completely new operation including new wastewater treatment ponds, sheds, composting facility, and feed mill. The expansion proposed a production capacity of 28,368 SPU and included the clearing of native vegetation. This proposal was considerably different to this application in terms of capacity, design, and the technologies used for waste management. The proposal involved a traditional pond based wastewater system with established processes for managing carcasses and spent bedding (e.g. composting). The Applicant has since withdrawn this expansion proposal.

Works Approval W5865/2015/1 was issued to the Applicant by DER on 25 September 2015 for the expansion of a piggery in Kojonup. The approval was for a 28,368 SPU piggery and included the construction of new sheds, a WTP, and an evaporation pond. The technology used for waste management at the Kojonup premises is equivalent to that proposed for the Australind Piggery with the anaerobic digestion of waste products and biogas capture and use.

Works Approval W5687/2014/1 was issued to the Applicant by DER on 28 September 2015 for the expansion of a piggery in Pinjarra. The Minister for Environment (the Minister) determined an appeal lodged in objection to the conditions applied by DER to the Works Approval. On 7 April 2016, the Minister determined to allow the appeal in part to the extent that additional requirements should be applied to the Works Approval conditions to address the risks of odour. The additional requirements are to:

- reflect the *Code of Practice for On-farm Biogas Production and Use (Piggeries) 2015*;
- include aspects relevant to the construction and installation of the biogas flare or the electricity generator; and
- ensure that the anaerobic pond cover is gastight.

5. Site and Operational History

5.1 Works approvals

5.1.1 W5631/2014/1

In 2013, the Applicant submitted an application to DER for a works approval for the expansion of the piggery to 28,368 SPU (refer to section 4.4. above). The application was assessed by DER, and a letter was provided to the applicant on 23 September 2015 indicating that, based on the assessment, DER intended to grant a works approval (W5631/2014/1) for the expansion. DER advised the Applicant that the works approval would not be granted until planning approval for the proposal was in place. Planning approval for the proposal was refused by the Shire of Harvey and the Western Australian Planning Commission (WAPC) and the Applicant appealed the decision to the State Administrative Tribunal. The Applicant has now withdrawn the works approval application.

5.1.2 W3017/2000/1

Works Approval W3017/2000/1 was granted by DER on 1 May 2000. The works approval related to the lining of an existing pond (Pond 3) with clay.

5.1.3 W3627/2002/1

Works Approval W3627/2002/1 was granted by DER on 1 May 2002. The works approval related to the lining of the anaerobic pond with clay and the installation of a second down-hydraulic gradient monitoring bore.

5.2 Licence amendments

Licence L6876/1989/12 was granted by DER on 11 October 2012. The licence was amended on 5 July 2013 to update it to the licence template in use at that time. The licence was transferred on 10 October 2013 from Milne Agrigroup Pty Ltd to GD Pork Holdings Pty Ltd to reflect the new ownership of the premises.

5.3 Compliance Inspections

DER has undertaken one premises inspection in the last three years, which was on 7 March 2014. No non-compliances were noted in the inspection report.

5.4 Annual Audit Compliance Reports

Annual Audit Compliance Reports (AACR) and Annual Environmental Reports (AER) have been submitted to DER in accordance with condition 5.2.1 of Licence L6876/1989/12. The reports generally demonstrate that the Applicant has complied with the licence conditions since taking over the premises in 2013.

5.5 Compliance history check

No prosecutions or statutory compliance or enforcement notices have been issued to the Applicant by DER under the EP Act, in relation to the premises.

DER's Incident and Complaints Management System (ICMS) database was searched to provide a complaints summary for the past three years. Eighteen odour complaints have been recorded against the premises, with the first recorded on 25 June 2015. All of the complaints have been unsubstantiated by DER.

6. Location and Siting

6.1 Siting Context

The Australind Piggery is located within the Kemerton Industrial Zone Buffer Area abutting a Public Purpose – Special Use reservation. The site is zoned 'rural' under the Greater Bunbury Region Scheme. Under Shire of Harvey District Planning Scheme No. 1, the land is zoned as 'Kemerton Buffer' and classed as a discretionary use.

Directly adjacent to the eastern boundary of the premises are irrigation areas associated with a wastewater treatment plant, which is located south-east of the premises boundary. A sheep and cattle abattoir is located approximately 200m south-west of the premises.

The general location of the premises is shown in Figure 2 below.

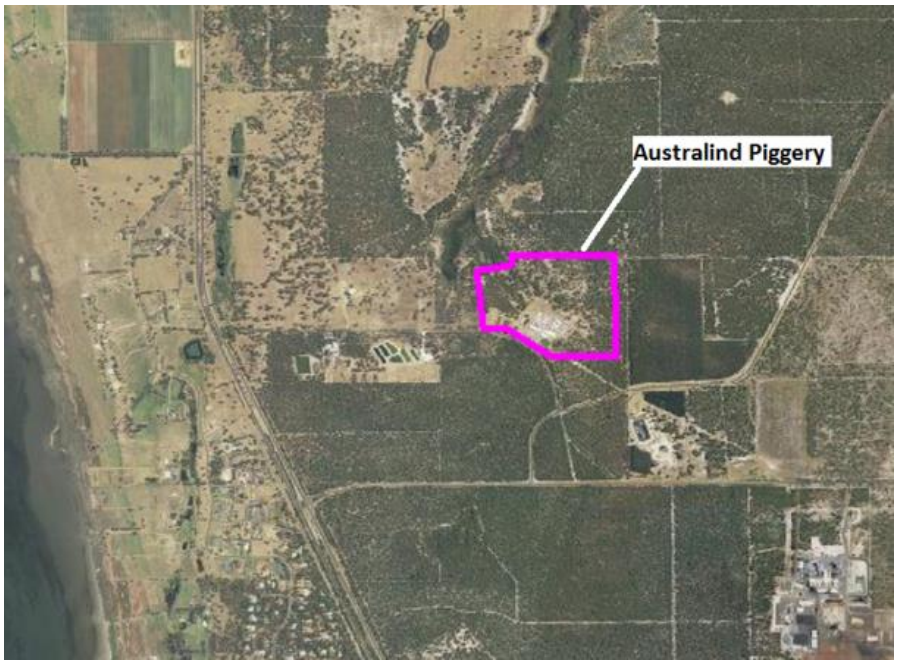


Figure 2: Aerial image of Australind Piggery located on Rosamel Road

6.2 Residential and Sensitive Premises

The closest residential premise to the piggery is located in an area zoned general farming as shown in Figure 3 below.

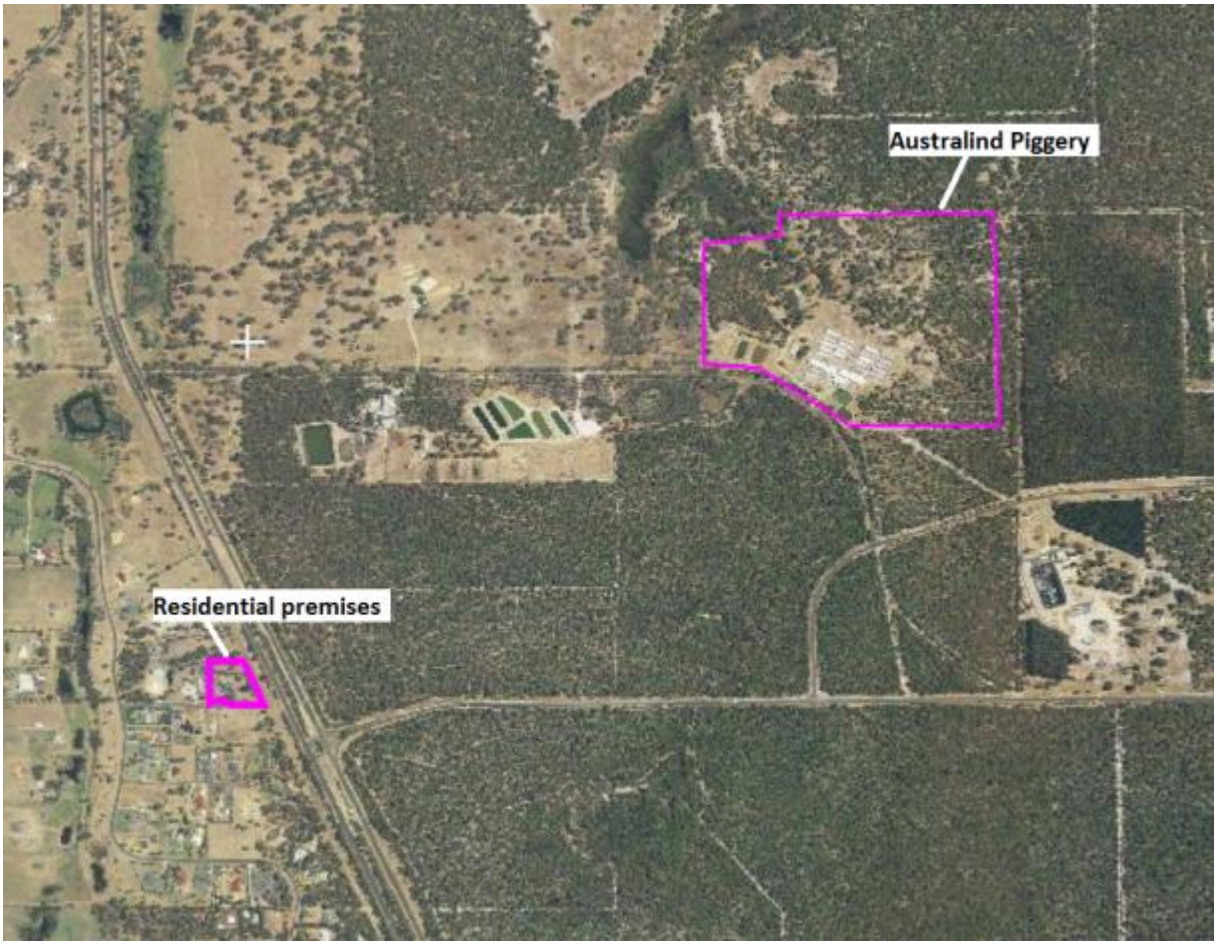


Figure 3: Arial image of the closest residential premises to Australind Piggery

Table 4 outlines the separation distances applicable to the premises and Table 5 details the closest residential and sensitive receptors along with the measured separation distance.

Table 4: Recommended separation distances

Category	Description	Emission and Distance (m)
2	Intensive piggery (1,000 animals or more) Premises on which pigs are fed, watered and housed in pens	Noise 1,000 Odour S-Factor calculation* *refer to National Environmental Guidelines for Piggeries (Australian Pork Limited, 2010)

Table 5: Receptors and distance from prescribed activity

Residential and Sensitive Premises	Distance from Prescribed Activity
Residential Premises (zoned special residential)	1,504m located to the south-west of the premises
Residential Premises (zoned general farming)	1,427m south-west and 1,446m west of the premises
Town	1,640m south-west of the premises
Assessment of separation distance	*Meets separation distance requirements for noise.* *Separation distance requirements for odour detailed in Table 7.*

6.2.1 S-Factor Separation Distance

The S-Factor calculation detailed in the NEGP has been used to calculate the separation distance. DER has calculated the Level-1 separation distance in accordance with the NEGP methodology. The results of the assessment are shown in Tables 6 and 7 below.

Table 6: S-Factor calculations

Receptor Type	SPU	S Factor	S Factor Value	Separation distance
Rural dwelling	11,800	S1R	1	848m
		S1T	0.5	
		S2R	11.5	
		S2S	0.85	
		S3	1	
Rural dwelling (directly to the west)	11,800	S1R	1	1,485m
		S1T	0.5	
		S2R	11.5	
		S2S	0.93	
		S3	1.6	
Rural residential	11,800	S1R	1	1,107m
		S1T	0.5	
		S2R	15	
		S2S	0.85	
		S3	1	
Town	11,800	S1R	1	1,844m
		S1T	0.5	
		S2R	25	
		S2S	0.85	
		S3	1	

Table 7: S-Factor and measured distance to sensitive receptors

Factors	Rural Dwelling	Rural Dwelling (west of the premises)	Rural Residential	Town
Level 1 recommended distance (m)*	848 m	1,485m	1,844m	1,844 m
Actual Distance (m)*	1,427m	1,446m	1,504m	1,640 m
Applicant calculation (based on Level 1)	848 m	NA	1,107m	1,844m
Separation distance	848m	1,485m	1,844m	1,844m

*DER calculation – refer to Table 6 for specific details

The NEGP classifies residential receptor types taking into account population density, odour sensitivity, and risk of exposure. The three receptor types within the NEGP are rural dwelling, rural residential, and town. The guideline states that the receptor definitions should be based on local authority classifications.

The Shire considers that residences within the 'special residential' zone as identified in Figure 4 should be assigned a receptor definition of 'town' in preference to 'rural residential'. This is based on the residences being classified as 'residential' under the District Planning Scheme No. 1 and 'urban' under the Greater Bunbury Regional Scheme.

Under the WAPC Special Residential Zones Policy No. DC 2.5, 'special residential' zoning allows for lots of a size which offer a style of spacious living at densities lower than those characteristic of traditional single residential developments but higher than those found in 'special rural' zones. The WAPC considers that residences zoned 'special rural' are essentially residential.

The measured distances from the piggery to the rural dwelling located west of the premises, the closest rural residential premise, and the Australind townsite boundary do not meet the Level-1 recommended separation distance as shown in Table 7. The premises are approximately 39m, 340m, and 200m respectively within the recommended separation distance. All but one residential premises located within the special residential zoning outside of the town boundary are located within the recommended separation distance. A number of residences within the town boundary are within the calculated 1,844m separation distance. DER's assessment of odour is detailed in Section 7.5.

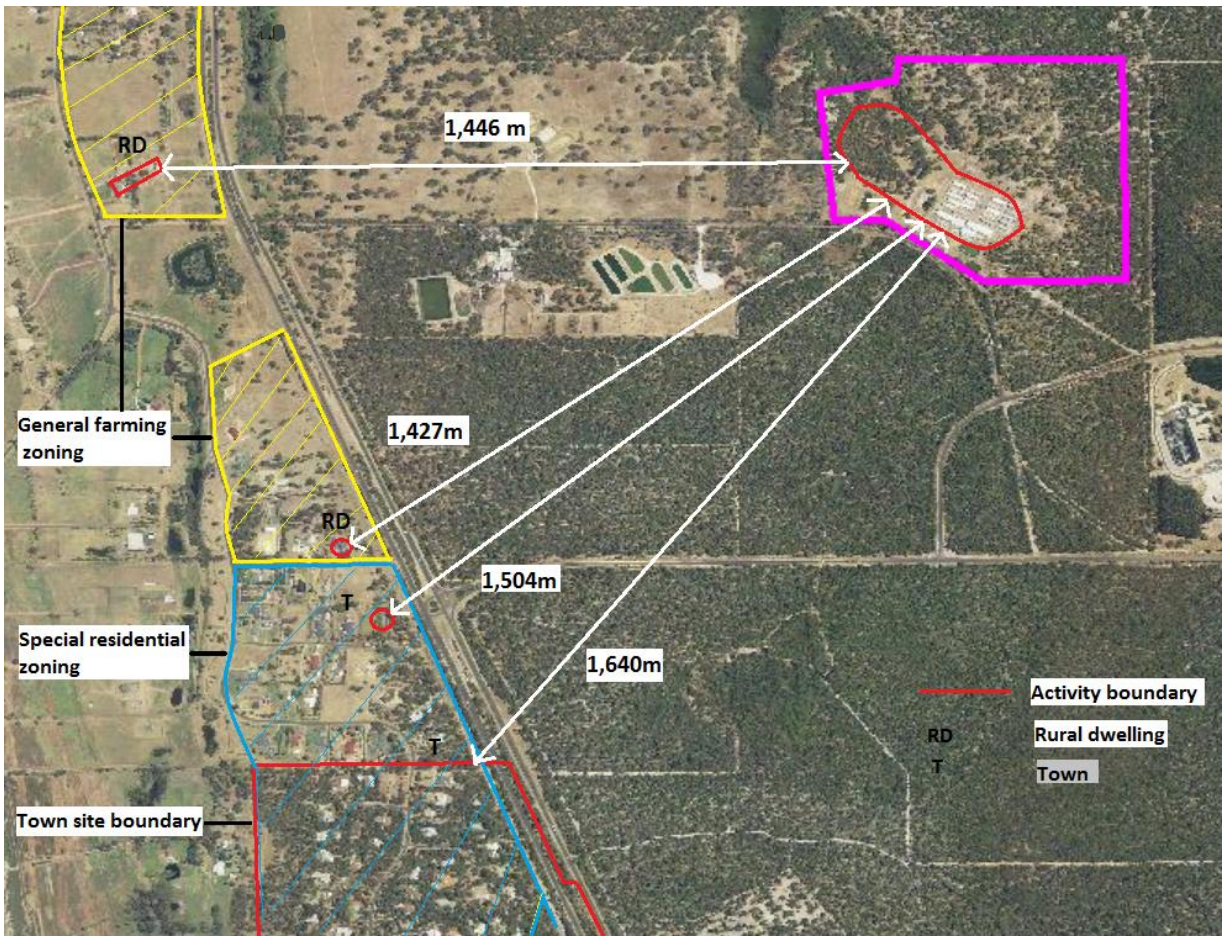


Figure 4 – Arial image of Australind Piggery and distances to sensitive receptors

6.3 Specified Ecosystems

Table 8: Specified ecosystems

Sensitive ecosystems	Distance from Prescribed Premises
Conservation category wetland	35m to the south-west
Leschenault Estuary (Conservation Category)	2,000m west. The premises is located within the Leschenault Estuary Lower Collie catchment.
RIWI Act Groundwater Areas	The premises is located within the RIWA Act area
RIWI Act Surface Water Area and Irrigation District	4,100km to the east of the Brunswick River and tributaries
Resource enhancement and multiple use wetlands	Located within 100m to the west (see Figure 5 below)
Threatened ecological communities (TECs) (priority)	260m
TEC (threatened)	1,480m

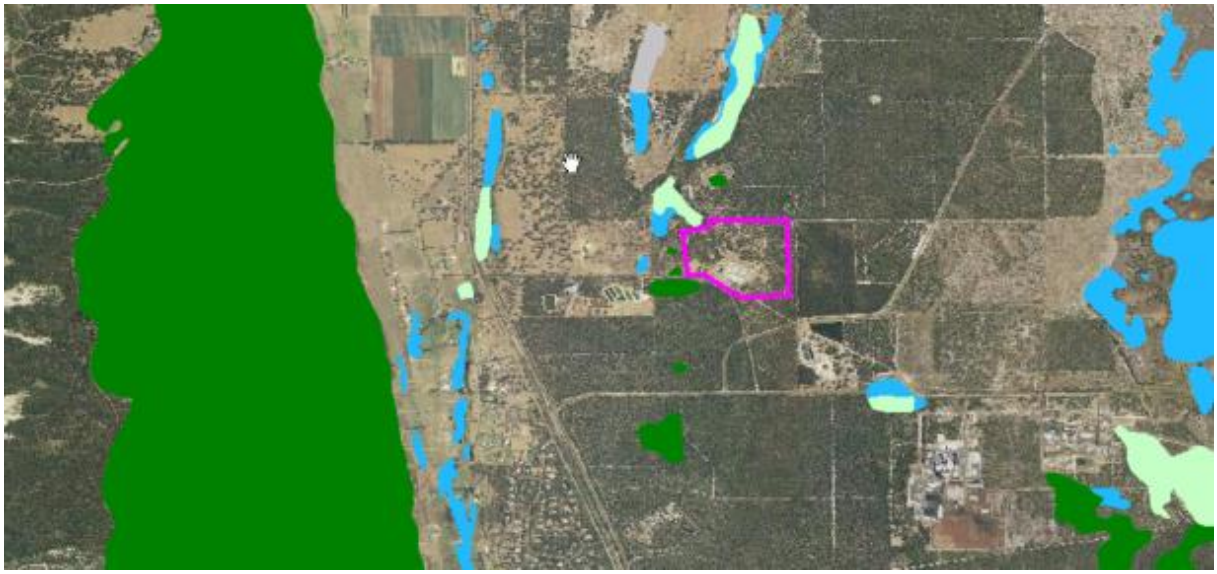


Figure 5: Wetlands surrounding the premises
(Management categories: dark green – conservation; lime green – resource enhancement; blue – multiple uses)

6.4 Groundwater and water sources

Table 9: Groundwater and water sources

Groundwater and water sources	Distance from Prescribed Premises
Conservation category wetland as receptor (ecosystem)	A north-south string of wetlands is located adjacent to the western portion of the premises boundary. Three conversation category wetlands are 28m, 37m, and 48m south-west of the premises boundary. Depth to groundwater is 3m (in winter) and flows west towards the Leschenault Estuary. There are a number of wetlands located within 50m to the west of the premises boundary and are likely connected.
Bore users (public health)	The existing premises extracts from the superficial aquifer on site. An abattoir located approximately 500m the west of the premises has a number of bores used for abattoir washing and stock watering. A bore is located north of the premises at approximately 200m (detailed as no current owner on WIN DoW GIS) and detailed for domestic/householder use. It is likely that the bore is down hydraulic gradient of GD Pork Australind.

6.5 Soil Type

The site is located on the southern Swan Coastal Plain on a sandy ridge with soils described as yellow, deep sands. Such soils generally have a high permeability. The depth to groundwater beneath the premises in winter is approximately 3m. The soil type and depth to groundwater indicate that groundwater is vulnerable. Statewide groundwater salinity mapping indicates that the total dissolved solids (TDS) at the premises are between 500-1000 mg/L. Mapping of the superficial aquifer suggests the TDS is between 250-500mg/L (GIS Groundwater Salinity – Superficial Aquifers). Given the TDS values, the groundwater value is likely to be beneficial.

6.6 Other site characteristics

Table 10: Locations of emission and sources of concern

Other emission or sources of concern	Location
Acid sulfate soils (ASS)	The premises is located in an area mapped with high to moderate risk of ASS. Condition 4 of the Development Assessment Panel approval requires the Applicant to carry out an acid sulphate soils self-assessment and, if required as a result of the self-assessment, produce and implement an acid sulphate soils report and an acid sulphate soils management plan.
Contaminated sites classification	The premises is not classified under the *Contaminated Sites Act 2003* as a known or suspected contaminated site. Over the past two reporting periods (2013-2014 and 2014-2015), groundwater monitoring data has consistently shown total nitrogen and total phosphorus levels above the ANZECC & ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality (South West Western Australia Wetlands – slightly disturbed ecosystems). The historical activities undertaken at the premises indicate the possibility of microbiological contamination most likely associated with the wastewater treatment ponds on site. Condition 3 of the Development Assessment Panel approval requires that the three wastewater ponds are decommissioned.
Potential cumulative odour emissions from nearby industrial premises with odours of similar characteristics (refer to Figure 6 below)	A sheep and cattle abattoir is located approximately 200 m south-west of the premises. A wastewater treatment plant is located approximately 300 m south-east of the premises with irrigation areas directly next to the eastern boundary.

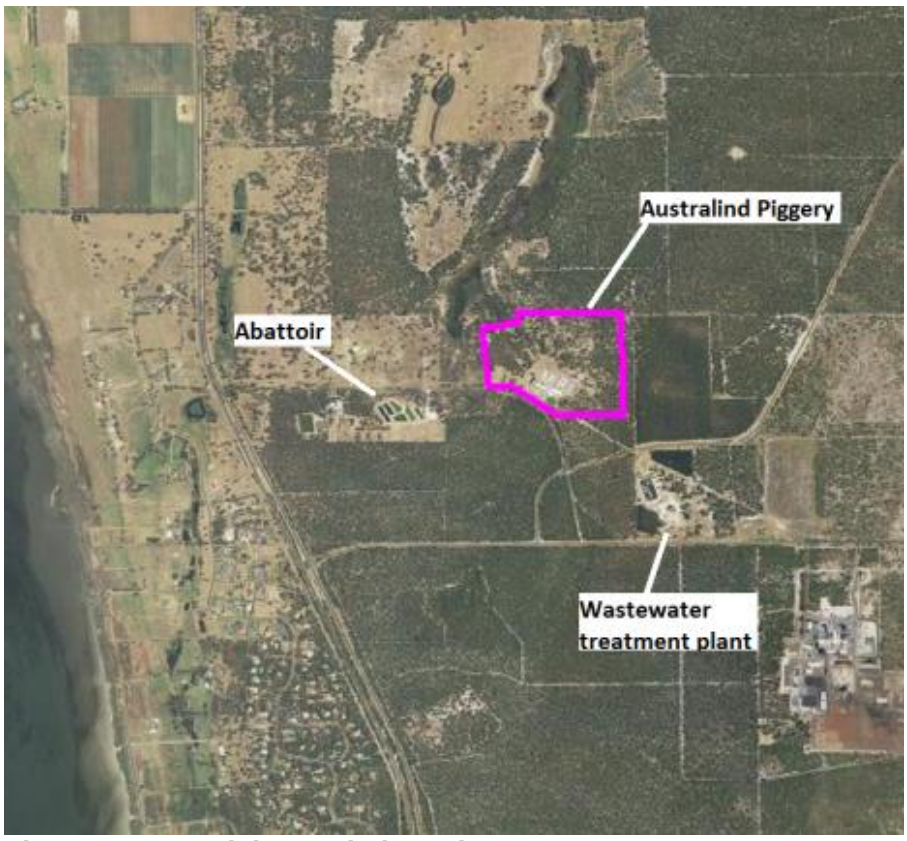


Figure 6: Potential cumulative odour sources

6.7 Meteorology

The Bureau of Meteorology's Bunbury station has been used as a source of meteorological data for the premises. The station is located 18km south-west of the premises. The average rainfall is 725mm per annum, with the majority of rainfall occurring between June and August. The annual wind data (between 1995 and 2010) indicates that the average wind direction is:

- from the E 26%, NE 12% and SE 18% in the mornings; and
- from the W 40%, NW 12% and SW 12% in the evenings.

6.7.1 Regional climatic aspects

The Australind area has a Mediterranean-type climate, with warm, dry summers, and cool, wet winters.

6.7.2 Rainfall and temperature

The mean rainfall and maximum temperatures for Bunbury are shown in Figure 7 below (mean maximum temperature 1995-2016, and mean rainfall 1995 to 2016).

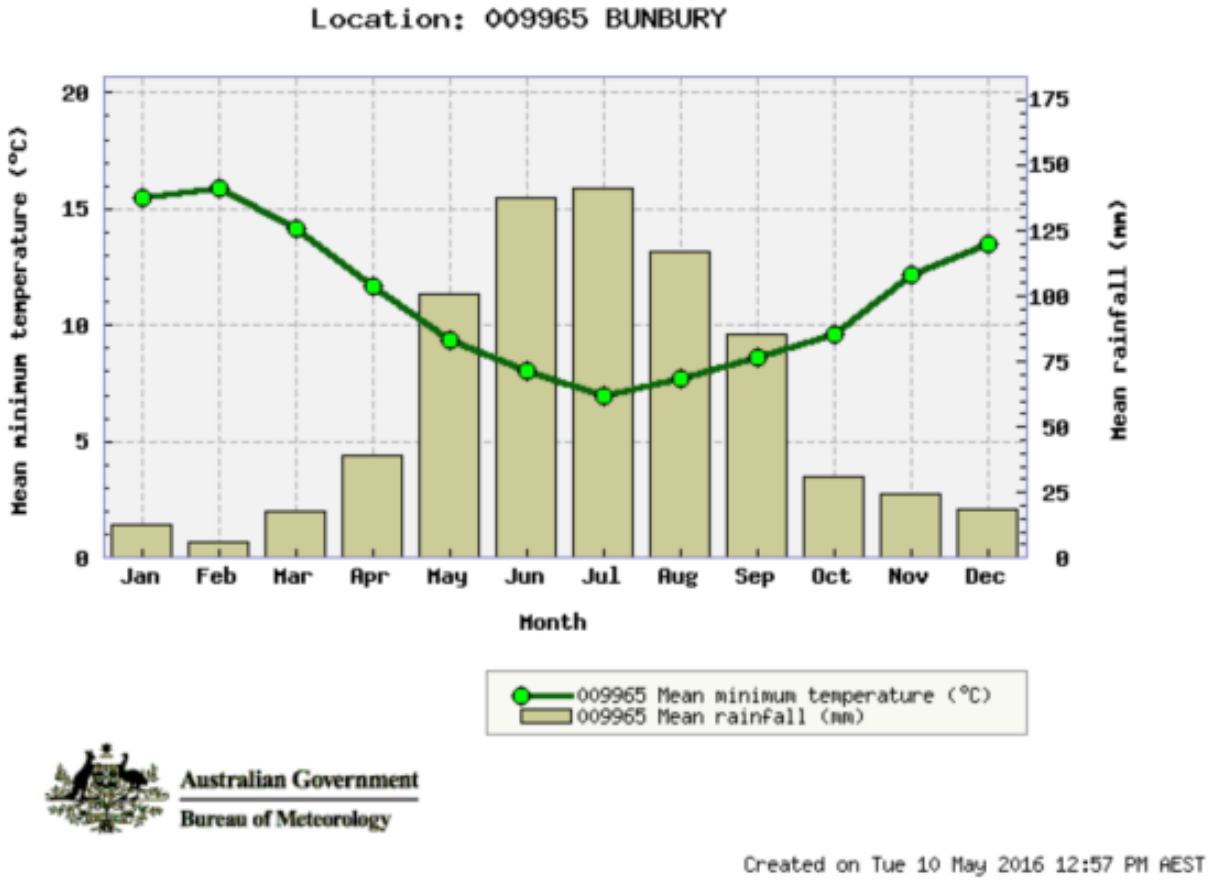


Figure 7: Mean temperature and rainfall Bunbury

7. Risk Assessment

7.1 Emission sources

Identification of key emissions is set out in Table 11 below.

Table 11: Identification of key emissions

	Activity	Details	Frequency	Potential emissions	Key contributing factors
1	Accommodation of pigs and storage and processing of waste material.	Intensive sheds are enclosed and ventilated using mechanical ventilation. The sheds have a pull plug system where effluent is directed to the WTP. Extensive sheds consist of flooring and two side walls with a tarpaulin cover. Spent deep litter bedding is mechanically cleaned out of the sheds and placed on a concrete platform prior to being directed into the WTP. Carcasses are stored on a concrete platform prior to entry into the WTP. Solid digestate from the WTP is stored on a concrete platform prior to removal off site.	Continual accommodation and processing of pigs. The storage of waste is continuous, with storage levels determined by the frequency of clean-out of the extensive sheds and mortality rates.	Odour from sheds and the storage and treatment of waste materials. Odour from biogas.	Actions including: • Cleaning and housekeeping; • Input of waste into the WTP; • Maintenance of the WTP; • Combustion of biogas.
2	The burning of treated biogas in internal combustion engines or flare.	Cleaned biogas is used by internal combustion engines to produce electricity and heat or is burnt in a backup flare.	Continuously during the operation of the WTP.	Combustion gases (oxides of nitrogen, sulfur dioxide and carbon monoxide).	Biogas composition (depending on feedstock composition). Combustion through engines or flare.
3	The collection, treatment, and storage of waste material.	Spills, seepage, leaks, or overtopping of liquid waste contained in the plug and pull system in the intensive sheds, effluent sump, and WTP. Leachate from waste materials stored in the extensive sheds and WTP storage areas.	Abnormal or emergency conditions. Decommissioning of existing wastewater ponds.	Emissions are likely to contain pathogenic organisms (including bacteria, viruses and protozoa), nutrients, and organic matter. Potential for emissions to contain pesticides and other agricultural chemicals.	Volumes and storage durations of waste materials Establishment and maintenance of containment infrastructure.

The premises infrastructure causing emissions and their location are identified in Table 12 below.

Table 12: Emission sources by Infrastructure and Location

		Emission		
		Combustion Gases	Odour	Contaminated wastewater and leachate
Source (see Section for infrastructure references)	Biogas plant Plan: Wastewater Treatment Plant Plan	●		
	WTP Plan: Wastewater Treatment Plant Plan		●	
	WTP, accommodation sheds and decommissioning of wastewater ponds Plan: Premises Plan, Wastewater Treatment Plant Plan and Existing Plan		●	●

7.2 Hazard – Pathway – Receptor Identification

The emission types have been identified with the pathway and receptors in Table 13 below.

Table 13: Emission Risks to Receptor

	Emission Type		
	Odour (from animals, storage of waste materials, and the WTP)	**Combustion gases** (from WTP engines or backup flare)	**Contaminated wastewater and leachate** (from WTP, sheds, and waste storage areas)
Potential Receptor (see section 6.2 for receptor details)	Residence (both short term and long term)	Residence (both short term and long term)	Groundwater Surface water
Pathway Type	Air	Air	Land Water
Pathway Assessment (see section 6.7 for meteorological details)	• Sensitive premises – located 1,427m to the south-west • Residential – located 1504m to the south-west • Townsite – 1,640m to the south-west Pathway through air	• Sensitive premises – located 1,427m to the south-west • Residential – located 1504m to the south-west • Townsite – 1,640m to the south-west Pathway through air	• Depth to groundwater (highest seasonal groundwater) – 3m. • Three conversation category wetlands – 28m, 37m, 48m south-west. • Resource enhancement and multiple use wetlands – 100m to the west. • Bore for domestic/household use – 200m north

	Emission Type		
	Odour (from animals, storage of waste materials, and the WTP)	**Combustion gases** (from WTP engines or backup flare)	**Contaminated wastewater and leachate** (from WTP, sheds, and waste storage areas)
Potential impact	Odour has the potential to impact amenity and wellbeing. Individual responses to odour emissions may vary depending on an individual's age, health status, sensitivity, and odour exposure patterns. Perceived odour intensity may increase or decrease on exposure. Community response to an odour can include annoyance, potentially leading to stress, and loss of amenity. Exposure to repeated odour events can create a nuisance effect.	Combustion gases in high concentrations could have potential impacts to human health. Exposure is through respiration.	Ecosystems: Contaminated wastewater and leachate emissions can result in a potential or actual alteration to the environment. They have to potential to disrupt ecological processes, have an impact on the aesthetic appeal of waters, and cause eutrophication. Public health: Potential human exposures to contaminants can be via ingestion or contact with contaminated water or eating food grown where there is contaminated soil or water. Exposure pathways include surface water that is linked to drinking or recreational use, groundwater that is linked to an aquifer used for domestic use, and soil that is used to grow food and livestock. Contaminants in groundwater are likely to move in plumes, slowly dispersing whereas contaminants in surface water are likely to mix and be diluted with clean water. Groundwater flow beneath the site is expected to be in a westerly direction.

7.3 Risk Criteria

During the assessment of risk, the criteria in Table 14 below will be applied to determine a risk rating as set out in Table 19.

Table 14: Risk Criteria

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Likelihood		Consequence		
The following criteria have been used to determine the likelihood of the risk / opportunity occurring.		**The following criteria has been used to determine the consequences of a risk occurring:**		
			Public Health	**Ecosystem/ Environmental**
Almost Certain	The event is expected to occur in most circumstances	Severe	• Loss of life • Exposure to hazard with permanent prolonged adverse health effects expected to large population • Health criteria is significantly exceeded	• Irreversible impact to significant high value or sensitive ecosystem expected • Irreversible and significant impact on a wide scale • Total loss of a threatened species expected • Ecosystem criteria is significantly exceeded
Likely	The event will probably occur in most circumstances	Major	• Exposure to hazard with permanent prolonged adverse health effects expected to small population • Significant impact to amenity for extended periods expected to large population • Health criteria is exceeded	• Long-term impact to significant high value or sensitive ecosystem expected • Long-term impact on a wide scale • Adverse impact to a listed species expected • Ecosystem criteria is exceeded
Possible	The event could occur at some time	Moderate	• Exposure to hazard with short-term adverse health effects expected to require treatment • Impact to amenity expected for short periods to large population • Health criteria are at risk of not being met	• Minor and short-term impact to high value or sensitive ecosystem expected • Off-site impacts at a local scale • Ecosystem criteria are at risk of not being met
Unlikely	The event is unlikely to occur	Minor	• Exposure to hazard with short-term adverse health effects expected • Impact to amenity expected for short periods to small population • Health criteria are likely to be met	• Moderate to minor impact to ecosystem component (physical, chemical or biological) • Minor off-site impacts at a local scale • Ecosystem criteria are likely to be met
Rare	The event may only occur in exceptional circumstances	Insignificant	• No detectable impacts to health • No detectable impacts to amenity • Health criteria met	• None or insignificant impact to ecosystem component (physical, chemical or biological) expected with no effect on ecosystem function • Ecosystem criteria met

7.4 Risk Treatment

DER will treat risks in accordance with the Risk Treatment Matrix below:

Table 15: Risk Treatment

Risk Rating	Acceptability	Treatment
Extreme	Unacceptable.	Risks will not be tolerated. DER will refuse proposals.
High	Acceptable subject to primary and secondary controls.	Risks will be subject to multiple regulatory controls including primary and secondary controls. This will include both outcome-based and management conditions.
Moderate	Acceptable, generally subject to primary controls.	Risks will be subject to regulatory controls with a preference for outcome-based conditions where practical and appropriate.
Low	Acceptable, generally not requiring controls beyond the proponents controls.	Risks are acceptable and will generally not be subject to regulatory controls.

7.5 Risk of Odour Impact Analysis

7.5.1 General Hazard Characterisation and Impact

Agricultural odour from the accommodation of animals and the storage of waste materials. Potential cumulative odour emissions from nearby industrial premises with odours of similar characteristics. Impact on receptors from an odour can include annoyance potentially leading to stress and loss of amenity. Exposure to repeated odour events can create a nuisance effect.

7.5.2 Criteria for Assessment

There are no set threshold or concentration criteria for odour assessment. Separation distances calculated in accordance with the S-Factor methodology in the NEGP are considered the most appropriate assessment criteria (see section 6.2.1).

7.5.3 Assessment of Applicant Controls

The Applicant's Environmental Management Plan (EMP 2015) has been reviewed to document how odour emissions from the premises will be managed.

Table 16: Proponent controls for odour emissions

Infrastructure controls for odour			
Site Infrastructure	**Description**	**Operation details**	**Reference to Issued Licence Plan**
WTP	The WTP is made up of a number of components including waste storage areas, a shredder and mixing tank, digester, evaporation tanks, and biogas reuse system. The WTP effluent collection pit is covered.	The WTP is operated continuously. Anaerobic digestion occurs in enclosed tanks. Biogas is combusted in an engine or flare.	Premises plan Wastewater Treatment Plant Plan
Biogas use equipment and biogas transport and flaring.	Internal combustion engines and a backup flare.	Cleaned biogas is combusted to produce electricity and heat, or combusted by a flare.	Wastewater Treatment Plant Plan
Intensive and extensive accommodation sheds.	Enclosed intensive sheds with automatic mechanical ventilation system (tunnel ventilation). Extensive sheds consist of flooring and two side walls with a tarpaulin cover.	Sheds occupied at all times and regularly cleaned. Fans at one end of the intensive sheds pull air from the other end, creating a drop in temperature by the addition of water resulting in evaporative cooling.	Premises Plan

Management controls for odour	
Waste collection and storage	Mixing of effluent and dry material from the collection pit and concrete storage areas in the WTP. On a daily basis, a number of effluent pits in the intensive sheds will be 'pulled' when they are 80-90% full. This will ensure a continuous inflow into the covered collecting pit located adjacent to the WTP. Carcasses will be immediately shredded and stored with spent bedding prior to being mixed and pumped by a manually operated pump into the digester tank in the WTP. There will be no long term storage of effluent in the sheds.
Cleaning of sheds after emptying and before new animals arrive	Cleaning will be undertaken using high-pressure water cleaners. When the piggery is operating normally, up to one and a half sheds will be pressure washed weekly. Before pressure washing, all remaining effluent will be flushed out of the sheds.
Education of staff and complaints management	Staff trained in management practices such as cleaning, washing, maintenance of equipment, ventilation, and contingency responses in respect to odour management. Complaints management through a complaints register, with investigation, corrective actions, and communication.

7.5.4 Consequence

The use of an anaerobic digestion WTP at a piggery is relatively new to Western Australia. AD plants are a mature technology and used extensively throughout Europe. The AD process occurs in a sealed system and does not form a source of odour under normal operating conditions. In the event of an emergency or abnormal operating conditions, venting or release of unburnt biogas can be a potential odour source. Products of combustion from biogas reuse do not typically have associated odour and are not considered as potential odour sources.

Handling and storage of feedstock (waste materials) before processing occurs in both open and closed infrastructure. The Applicant proposes the use of management measures as referenced in Table 16 to control odour.

Given the enclosed design of the WTP, the odour potential of effluent treatment is significantly decreased. Despite the presence of sensitive receptors within the recommended separation distances, the Delegated Officer considers that the combination of chosen technology, infrastructure controls, and management controls are sufficient to mitigate the risk. The calculated separation distance using a Level 1 assessment provides conservative separation distances.

Taking into consideration the relevant factors discussed in this report, there is the potential for a range of odour consequences to be experienced. The Delegated Officer considers that with the available separation distance, the chosen waste treatment technology, the site infrastructure controls, and the management control measures, the consequence of odour impact is expected to be minor, with any impact to amenity expected for short periods to a small population.

7.5.5 Likelihood of consequence

It is possible that odour emissions from the premises could impact the nearest receptors under some operational and metrological conditions. The likelihood rating is possible.

7.5.6 Overall risk rating

The overall risk rating for odour is moderate.

7.6 Risk of Combustion Gases Impact Analysis

7.6.1 General Hazard Characterisation and Impact

Combustion of biogas in engines or the backup flare will generate combustion gases (oxides of nitrogen, sulfur dioxide and carbon monoxide), which can impact on human health.

7.6.2 Criteria for Assessment

The assessment criteria for combustion gases and ambient air quality standards are detailed in the NEPM.

7.6.3 Assessment of proponent controls

The Applicant's Environmental Management Plan (EMP 2015) has been reviewed to document how combustion gases emissions from the premises will be managed:

Table 17: Proponent controls for combustion gases

Infrastructure controls for combustion gases			
Site Infrastructure	**Description**	**Operation details**	**Reference to Issued Licence Plan**
Biogas use equipment and biogas transport and flaring.	The biogas plant is part of the WTP. Biogas is used to fuel combustion engines or combusted by a backup flare.	Expected to produce 8190kW per day of electricity with 4.9kg per hour of exhaust gases per engine. Contingency storage of biogas in the WTP if both the engines and flare are unavailable pending repair or replacement.	Premises Plan Wastewater Treatment Plant Plan
Management controls for combustion gases			
Monitoring of WTP and biogas transport and flaring.	Daily visual check of the entire WTP system. Quality of biogas is measured daily. Biogas production metred and recorded daily.		

7.6.4 Consequence

Given the separation distance to the receptors and expected concentrations of combustion gases, it is likely that there will be no detectable impacts to human health with health criteria being met, and no impact on ecosystem function. The consequence rating is insignificant.

7.6.5 Likelihood of consequence

The combustion of biogas will occur under normal operation but will only impact residences under certain weather conditions. The likelihood has been assessed as unlikely.

7.6.6 Overall risk rating

The overall risk rating for combustion gases is low.

7.7 Risk to Groundwater and Surface Water Analysis

7.7.1 General Hazard Characterisation and Impact

Waste and leachate emissions may enter groundwater and surface water, leading to contamination. Adverse health impacts and loss of amenity may be experienced by receptors in contact with contaminated water. Actual alteration to the environment including disruption of ecological processes, impact on the aesthetic appeal of waters, and eutrophication could occur.

7.7.2 Criteria for Assessment

The *Australian Drinking Water Guidelines* (2011) and the freshwater aquatic ecosystem protection guidelines (ANZECC & ARMCANZ 2000).

7.7.3 Assessment of proponent controls

The Applicant's Environmental Management Plan (EMP 2015) has been reviewed to document what controls are in place for spills or leaks of material and management of wastes.

Table 18: Proponent controls to minimise groundwater and surface water impacts

Infrastructure controls for groundwater and surface water impacts	
Infrastructure	**Description**

WTP and accommodation sheds	New and existing infrastructure controls include:
	• plug and pull effluent system and underfloor pits with contingency storage for 30 days;
	• enclosed effluent sump with three days capacity;
	• effluent transported in PVC pipes;
	• bunded concrete area for spent litter and pressed manure storage with a capacity of 20m^3;
	• WTP located on concrete platform consisting of impervious:
	  ○ 50m^3 feeding tank; and
	  ○ Two enclosed 1,976m^3 digesters;
	• concrete floor and side walls for extensive sheds; and
	• water supply in extensive sheds located on inner walls to ensure any spills are captured in the deep litter.

Management controls for groundwater and surface water impacts	
Monitoring of WTP	• Daily visual inspection of the WTP; • Management of waste streams directed to the WTP; • Extensive sheds are cleaned out every four-six weeks; and • Extensive sheds are mechanical cleaned and scraped without the use of water.
Monitoring controls for groundwater and surface water impacts	
Monitoring of groundwater	• Six monthly sampling of three groundwater monitoring bores for parameters including total dissolved solids, total nitrogen and total phosphorus.

7.7.4 Consequence

Given the relevant factors discussed in this report and the fact that groundwater in the area is considered beneficial, and the surface water has value, there could be a detectable impact on local groundwater and surface water from contaminated wastewater and leachate emissions. The pathways by which the contaminants may reach receptors are likely to dilute the concentration over time reducing the impact. The consequence has been assessed as minor.

7.7.5 Likelihood of consequence

Based on the pathway characteristics and infrastructure controls in place, the likelihood is unlikely.

7.7.6 Overall risk rating

The overall risk rating for groundwater and surface water impacts is moderate.

7.8 Summary of Risk Assessment and Acceptability

The risk items identified in section 6, including the application of risk criteria and the acceptability with treatment, are summarised in Table 19 below.

Table 19: Risk rating of emissions

	Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating (with proponent controls)	Acceptability with treatment (conditions on instrument)
	Type	**Source**					
1.	Odour from animals, storage of waste materials and the WTP	Infrastructure and handling process	Air, moving with direction of wind	Infrastructure and management controls	Amenity and public health	Minor consequence Possible likelihood **Moderate risk**	Acceptable subject to proponent controls conditioned
2.	Combustion gases from WTP engines or backup flare	Infrastructure and handling process	Air, moving with direction of wind	Management controls	Amenity and public health	Insignificant consequence Unlikely likelihood **Low risk**	Acceptable, subject to proponent controls conditioned
3.	Leaks, spills or overtopping of waste material infiltrating to groundwater or surface water	Contaminated wastewater and leachate	Land infiltration to groundwater and/or direct overland or near-surface flow to surface water	Sealed infrastructure, management controls and monitoring	Ecosystem	Minor consequence Unlikely likelihood **Moderate risk**	Acceptable subject to proponent controls conditioned

8. Determined Regulatory Controls

8.1 Summary of Controls

Regulatory controls have been determined on a risk-based approach for those risks.

Table 20: Regulatory controls

		Controls		
		8.1 Siting of infrastructure controls	8.2 Specified Infrastructure and Equipment Controls	8.3 Groundwater Monitoring Requirements
Risk Items (see Section 6.0)	1. Odour from animals, storage of waste materials and the WTP		●	
	2. Combustion gases from WTP engines or backup flare	Low risk. No controls required		
	3. Waste and leachate from infrastructure and operations	●	●	●

8.1 Siting of infrastructure controls

8.1.1 Wetlands

All piggery infrastructure must be located at least 50m from geomorphic wetlands.

Distance from infrastructure must be calculated from the outer perimeter of any embankment or physical building.

Note: Siting requirements derived from the Final Application.

Grounds: The separation distance is required to protect the ecological function of the wetlands. The proposed infrastructure will be constructed within the current footprint of existing sheds maintaining the established separation distance to wetlands.

8.2 Specified Infrastructure and Equipment Controls

8.2.1 Sheds and Waste Handling System

The sheds and waste handling system must be designed and constructed so as to meet the following specifications:

(a) All new sheds must be fully enclosed with mechanical ventilation;

(b) Intensive sheds must comprise slatted floors and contain a feeding system to all animals within the shed;

(c) Intensive sheds must employ pull and plug systems comprising of impermeable, corrosion-resistant, and sturdy underfloor pits and a 250m^3 covered concrete collection effluent sump;

(d) The Licensee must ensure that all effluent from the intensive piggery sheds is directed to the wastewater treatment plant by 300mm diameter impermeable PVC piping; and

(e) Feed dispensers from the floor, creeps or feeders.

Note: Specified infrastructure requirements derived from the Final Application.

Grounds: This condition requires that the sheds and waste handling system are designed and constructed as proposed. This infrastructure is at the start of the waste management process and influences potential odour and leachate emissions from the operations. The condition requires the continued use of the infrastructure and equipment and ensures regulatory oversight.

8.2.2 Waste Storage and Treatment Areas

The Licensee must ensure that all waste storage and treatment areas are constructed on impermeable and bunded concrete hardstand.

Note: Specified infrastructure requirements derived from the Final Application.

Grounds: The condition is required to protect the groundwater and surface water from potential impacts.

8.2.3 Waste Treatment Plant

Following construction and commissioning of the Waste Treatment Plant, certification must be provided from a suitably qualified professional that:

(a) the plant has no major operational defects; and

(b) is fit for the purpose intended, being the treatment of waste from the maximum number of SPUs to be held on the premises.

Note: CEO requirements specified in the controls in paragraph 8.2.3.

Grounds: The use of anaerobic digestion at a piggery is relatively new to Western Australia. The WTP design and operation is critical to the control of potential emissions from the premises. The final design and specification of the WTP have not yet been established by the Applicant. Therefore, a condition has been applied to require the Applicant to demonstrate that the WTP has been designed and constructed to specification and can be operated as proposed.

8.2.4 Biogas Transport and Flaring

A flare must be installed for the combustion of biogas generated by the WTP.

The flare must be designed, constructed, and sited in accordance with the *Code of Practice for On-farm Biogas Production and Use (Piggeries)* Australian Pork Limited (2015), APL Project 2011/1013.423 inclusive of:

(a) biogas transfer pipelines and fittings; and

(b) biogas conditioning prior to combustion in the flare.

The biogas flare design specifications must include:

(a) a rated capacity to safely combust all biogas in storage under the domes of the anaerobic digesters;

(b) a measurement device to monitor the operational status of the flare during periods when the flame is invisible; and

(c) a flowmeter to monitor the quantity of biogas sent to the flare.

The design and construction of the flare, including any ancillary components, must be completed by a suitably qualified professional.

Note: CEO requirements specified in the controls in paragraph 8.2.4.

Grounds: Adequate and safe design, construction, operation, and maintenance of biogas transport and flaring equipment is an important part of the management of waste through AD in the WTP. The condition is necessary for the overall operation of the WTP and ensures regulatory oversight.

8.2.5 Biogas Use Equipment

The biogas use equipment must be designed, constructed and sited in accordance with the *Code of Practice for On-farm Biogas Production and Use (Piggeries)* Australian Pork Limited (2015), APL Project 2011/1013.423; and

Combined heat and power units must be designed and installed, or signed off by a suitably qualified professional.

Note: CEO requirements specified in the controls in paragraph 8.2.5.

Grounds: Adequate and safe design, construction, operation, and maintenance of biogas transport and flaring equipment is an important part of the management of waste through AD in the WTP. The condition is necessary for the overall operation of the WTP and ensures regulatory oversight.

8.2.6 Decommissioning of existing wastewater ponds

During the decommissioning of the three existing wastewater ponds, desludging must not breach the pond embankment or pond lining or result in any effluent runoff.

Note: Condition 3 of planning approval granted by the Southern Joint Development Assessment Panel requires that the wastewater ponds be decommissioned.

Grounds: Decommissioning of wastewater ponds has the potential create a risk to groundwater and surface water through emissions containing pathogenic organisms, nutrients, and organic matter. The condition ensures regulatory oversight.

8.3 Groundwater Monitoring Requirements

8.3.1 Monitoring Requirements

The monitoring of groundwater from bores installed within the premises boundary, located south, south-west, and west of the site infrastructure.

8.3.2 Monitoring Reports

Monitoring reports are required to be provided annually.

Note: Monitoring is currently undertaken and reported by the Licensee.

Grounds: The Final Application indicated that groundwater monitoring has occurred and would continue on site to monitor potential impacts of emissions to groundwater. No further detail is provided. DER has retained monitoring conditions that are in the current licence. The six-monthly monitoring will be used as a performance indicator to determine the effectiveness of the infrastructure and equipment controls.

9. Setting Conditions

The conditions in the amended licence have been determined in accordance with DER's *Guidance Statement on Setting Conditions* (2015).

DER's *Guidance Statement on Licence Duration* (2014) has been applied, and the amended licence expires in 12 years from the date of issue.

Condition Ref	Grounds
Environmental Compliance Condition 1	Environmental compliance is a valid, risk-based condition to ensure appropriate linkage between the licence and the EP Act.
Notification of Material Change 2, 3 and 4	These conditions are valid, risk-based and enable flexibility in operations.
Works 5, 6, 7, 8, 9, 10, 11	These conditions are valid, risk-based and enable flexibility in operations.
Infrastructure and Equipment 12, 13 and 14	These conditions are valid, risk-based and contain appropriate controls (see section 6).
Groundwater Monitoring and Reporting 15, 16, 17 and 18	This condition is valid, risk-based and consistent with the EP Act.
Dust Monitoring and Reporting 11 and 12	This condition is valid, risk-based and consistent with the EP Act.
Emissions 19	This condition is valid, risk-based and consistent with the EP Act.
Information 20, 21, 22, 23 and 24	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.
All conditions from existing licence L6876/1989/12 have been removed and replaced, except for condition 3.8.1 - ambient environmental quality monitoring, which has been retained in the amended licence as condition 15 - groundwater monitoring and reporting.	The previous conditions have been replaced with comparable controls in the amended licence. New conditions provide controls that are reflective of the proposed operations. Retaining the groundwater monitoring requirements is valid as it will continue to serve a purpose by allowing impacts to groundwater to be detected.

DER may review the appropriateness and adequacy of controls at any time. Following a review, DER may initiate amendments to the licence under the EP Act.

10. Applicant's Comments on Risk Assessment

The Licensee was provided with the draft decision report and amended licence on 2 June 2016.

The Licensee's response is set out below:

Licensee comments	DER's consideration of comments
In the license on page 3 in the Works infrastructure table under "Accommodation Sheds" the following sentence: (b) Intensive sheds must comprise slatted *concrete* floors and contain *continuous* feeding system to all animals within the shed; I suggest removing the word concrete and continuous. Because this is a breeder farm (like the Pinjarra farm) we sometime use plastic and/or cast iron slatted floor for the small piglets. (there is still concrete in the pits underneath). We also don't feed	The words concrete and continuous have been removed from the licence condition. This will allow the Licensee flexibility regarding the type of material used for flooring. This does not change the requirement for the underfloor pits that capture the waste material from sheds to be constructed from impermeable and corrosion-resistant material. The requirement for an on-demand continuous feeding system has been removed as it is not appropriate to this type of piggery.

Licensee comments	DER's consideration of comments
sows continuously like we do with grower pigs like in Kojonup. If we did we would end up with sows the size of cows. The word continuous is there because there is a perceived link between restrictive feeding and pigs squealing (noise). However we are planning to apply same feeding regime as done in Pinjarra and as you know noise measurement on site suggested noise levels where lower than background nature noise for the receptor 300m away.	
In the license on page 7 in the Emissions table under combustion gases: The requirements refer to row 2 and 4 in Schedule 4 and Condition 13 but Schedule 4 is about ground water monitoring and so is condition 13.	Error in referencing. The reference to Schedule 4 has been deleted and replaced with the Infrastructure Controls Table.

11. Conclusion

This assessment of the risks of activities on the premises has been undertaken with due consideration of a number of factors, including the documents and policies specified in this decision report (summarised in Appendix 1).

Based on this assessment, it has been determined that an amended licence will be granted subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

12. References

Australian and New Zealand Environment and Conservation Council & Agriculture and Resources Management Council of Australia and New Zealand (2000), *Australian Water Quality Guidelines for Fresh and Marine Water Quality.* Accessed at http://www.environment.gov.au/system/files/resources/53cda9ea-7ec2-49d4-af29-d1dde09e96ef/files/nwqms-guidelines-4-vol1.pdf.

Department of Environment Regulation (2014) Assessment and management for contaminated sites. Available from http://www.der.wa.gov.au.

Department of Environment Regulation (2014) Guidance Statement on Licence Duration. Available from http://www.der.wa.gov.au.

Department of Environment Regulation (2015) Guidance Statement on Setting Conditions. Available from http://www.der.wa.gov.au.

Code of Practice for On-farm Biogas Production and Use (Piggeries) Australian Pork Limited (2015), APL Project 2011/1013.423 Accessed at http://australianpork.com.au/wp-content/uploads/2013/10/2011_1013-423-CoP-Final-April15.pdf

National Environmental Guidelines for Piggeries (Australian Pork Limited, 2010) Accessed at https://www.environment.gov.au/system/files/pages/c7dc0bcb-56b7-41c0-9c66-69618c7dcad7/files/cfi-national-environmental-guidelines-piggeries.pdf

National Environmental Protection (Ambient Air Quality) Measure 2003. Accessed at https://www.legislation.gov.au/Details/C2004H03935

Jonathan Bailes
MANAGER LICENSING (PROCESS INDUSTRIES)
LICENSING AND APPROVALS

Delegated Officer under section 20 of the Environmental Protection Act 1986

Appendix 1: Key Documents

Documents assessed and considered in this review:

	Document Title	Availability
1	Licence L6876/1989/12	accessed at http://www.der.wa.gov.au
2	Draft Works Approval W5631/2014/1	DER records
3	Works approval W3017/2000/1 issued 1 May 2000	accessed at http://www.der.wa.gov.au
4	Works approval W3627/2002/1 issued 1 May 2002	
5	DER *Guidance Statement on Regulatory Principles*, July 2015	accessed at http://www.der.wa.gov.au
6	DER *Guidance Statement on Setting Conditions*, September 2015	
7	DER *Guidance Statement on Licence Duration*, November 2014	
8	DER *Guidance Statement on Licensing and Works Approvals Processes*, September 2015	
9	DER Compliance Inspection undertaken 7 March 2014	DER records
10	Southern Joint Development Assessment Panel - Determination on Development Assessment Panel Application for Planning Approval	DER records

Attachment 1: Planning Approval