Government of Western Australia
Department of Environment Regulation

Works Approval

Division 3 Part V of the Environmental Protection Act 1986 (WA)

Works Approval Number	W5687/2014/1 Number/Year issued/Version (for amendments or renewals)	
Works Approval Holder	GD Pork Pty Ltd Full legal name	126 978 685 ACN Number
Registered business address	Level 3, 35 Outram Street WEST PERTH WA 6005	
Address for notifications If different to registered address	PO Box 600 WEST PINJARRA WA 6208	
Duration Original works approval term or renewal period	28 September 2015 to 27 September 2018 Commencement date / Expiry date	
Prescribed Premises	Category 2 Intensive piggery: premises on which pigs are fed, watered and housed in pens Category Number of Prescribed Premises and description 9,713 animals (6,854 Standard Pig Units (SPU)) Production/Design Capacity	
Premises	Lot 502 on Deposited Plan 54832 Certificate of Title Volume 2677 Folio 599 Sutters Lane WEST PINJARRA WA 6208 Legal description	
Amendment	First Issue Effective date	

This Works Approval is granted in respect of Works to be constructed on the Premises, subject to conditions, to the Works Approval Holder on 27 September 2015 by:

Date signed: 24 September 2015

_____

Kelly Faulkner
Executive Director, Licensing and Approvals
an officer delegated under section 20 of the Environmental Protection Act 1986 (WA)

Premises Description

The Premises are located at Lot 502 Sutters Lane, West Pinjarra WA 6208.

The Works Approval Holder is carrying out activities at the Premises which fall within Category 2, and are Prescribed Premises under the *Environmental Protection Act 1986* (EP Act). On completion of the Works, the Works Approval Holder will have expanded an existing intensive piggery to include:

- The following sheds, all with mechanical ventilation:
  - 1 extended mating shed
  - 1 maiden gilt shed
  - 2 dry sow sheds
  - 2 new farrowing sheds
  - 1 breeder shed
  - 1 extended boar shed
- An anaerobic covered pond (Biogas pond) (18.3ML; lined with clay and HDPE);
- An evaporation pond with three compartments (30.7ML; lined with clay and HDPE); and
- A carcass composting facility.

Existing wastewater treatment ponds will be reshaped and decommissioned after the construction of the anaerobic pond.

Conditions

Environmental compliance

1. The Works Approval Holder 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 section 61;

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

(c) not causing, or doing anything that is likely to cause, an offence under the EP Act, except where the Works Approval Holder does something in accordance with a Condition which expressly states that a defence under section 74A of the EP Act may be available.

Premises

2. The Works Approval Holder must carry out the Works within the Premises in accordance with the requirements set out in Schedule 2.

3. This Works Approval applies to the Premises defined in the Premises Description Table, and as depicted in the Premises Map in Schedule 1.

Premises Description	
General Location	**Legal land description, reserve or tenement (all or part)**
Lot 502 Sutters Lane WEST PINJARRA WA 6208	Lot 502 on Deposited Plan 54832 Certificate of Title Volume 2677 Folio 599

Location of Works

4. The Works Approval Holder must locate the Works generally in accordance with the Site Plans in Schedule 3.

Infrastructure Requirements

5. Subject to Condition 7, at least 10 business days prior to the commencement of the Works, the Works Approval Holder 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 Infrastructure Requirements Table below.

6. Subject to Condition 7, on completion of the Works, the Works Approval Holder 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 Infrastructure Requirements Table below have been constructed with no material defects.

7. The Works Approval Holder must not depart from the requirements specified in column 2 of the Infrastructure Requirements Table except:

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

(b) 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 Works Approval are still satisfied.

8. If Condition 7 applies, then the Works Approval Holder must provide the CEO with a list of departures which are certified as complying with Condition 7 at the same times, and from the same professional, as the certifications under Conditions 5 and 6.

Infrastructure Requirements Table	
Column 1	**Column 2**
Infrastructure	**Requirements (design and construction)**
All sheds, ponds and carcass composting facility	(a) All sheds must have a minimum 2 m separation to groundwater. (b) All ponds must have a minimum 2 m separation to groundwater. (c) Carcass composting facility must have a minimum 2 m separation to groundwater. (d) Exact distances to groundwater must be certified prior to commencement of construction. (e) Where the clearances do not exist at ground level, the Applicant must with engineered certification, elevate the area to attain the adequate separation distances. *Separation to groundwater refers to the vertical separation of the infrastructure calculated from the underside of the lowest point to the highest point of the highest seasonal water table.*
All ponds and piggery infrastructure	All ponds and piggery infrastructure must be located at least 50 m from conservation category wetlands and resource enhancement wetlands. *Distance from infrastructure must be calculated from the outer perimeter of any embankment or physical building.*

Infrastructure Requirements Table	
Column 1	**Column 2**
Infrastructure	**Requirements (design and construction)**
Groundwater monitoring bores	(a) New monitoring bores must be installed prior to the commencement of works and maintained until the completion of works. (b) Three new groundwater monitoring bores must be installed which meet the requirements of *Minimum Construction Requirements for Water Bores in Australia* (AIH 2012). (c) New groundwater monitoring bores must be sited in accordance with the Department of Water *Water Quality Protection Note 30 Groundwater Monitoring Bores* (DoW 2009). (d) New groundwater monitoring bores must be sited with the Chief Executive Officer's (CEO) approval: (i) one up-gradient of the infrastructure; (ii) one down-gradient of the infrastructure; and (iii) one adjacent to the boundary of the resource enhancement wetland. (e) New groundwater monitoring bores must be surveyed to allow the ground level (to Australian Height Datum) at each location be accurately determined.
Wastewater treatment system	Wastewater treatment system must be designed and constructed so as to meet the following specifications: (a) inlets will be well separated from outlets with distances to be specified; (b) ensure all wastewater from piggery sheds is directed to the wastewater treatment system by impermeable PVC piping; (c) ensure all wastewater transfers within the wastewater treatment system are via impermeable PVC piping; (d) all components of the effluent system to be constructed above ground level with exclusion of piping between sheds and effluent ponds; (e) employ pull and plug systems for all sheds, as described in Appendix G of the Final Application, comprising of impermeable, corrosion resistant and sturdy underfloor pits; (f) include an electrical effluent pump triggered by a float switch which detects effluent in the sump and pumps to treatment ponds; (g) submerged outlet leading into the sump; (h) sump pit 5.2 m x 5.2 m x 1.75 m deep, having a capacity of 47.32 m^3, engineered with 250 mm thick concrete walls and floor, with reinforcing steel and 32 MPA concrete; (i) inlet pipes to sump pit to be located at least 590 mm below the top of the sump pit; (j) pump of at least 5,600 litre/minute capacity to pump effluent into the covered anaerobic pond; (k) high velocity pumps must be used to ensure solids are kept in suspension; and (l) pumps must be switchable to manual control.
Water collection and runoff	(a) Rainfall from shed rooftops will be collected and directed into below ground soak-wells for direct infiltration into the soil. (b) All concrete laneways must be covered by skillion roof with drainage along the laneways draining to effluent pits under the sheds. (c) Grounds between sheds must be covered: 20 mm blue metal. (d) Surface water diversion system must be implemented to ensure that surface water around piggery infrastructure is diverted from existing drains on the premises.

Infrastructure Requirements Table	
Column 1	**Column 2**
Infrastructure	**Requirements (design and construction)**
Sheds	(a) All sheds must have concrete pits underneath to enable pull and plug system. (b) All new sheds must be fully enclosed with mechanical ventilation. (c) All new sheds must have slatted concrete floor and pens. (d) New sheds must be constructed surrounding retained existing sheds to act as a noise buffer. (e) Replacement breeder shed must have feed dispensers enabling feed ad libitum.
Carcass composting facility	(a) Carcass composting hardstand must be constructed of concrete with a minimum thickness of 150 mm of 32 MPA concrete and bunded to prevent runoff. (b) Size of the composting floor area to be at least 450 m^2. (c) Runoff system must be designed and constructed to collect all runoff into impermeable piping directed to concrete collection pit. (d) Collection pit must contain submersible pump with float switch to pump run off into the anaerobic pond. (e) Impermeable PVC piping must connect the composting facility to the anaerobic pond. (f) Composting area must be fenced to prevent feral animals entering the facility.
Ponds	(a) All ponds must be designed and constructed to the dimensions specified in the drawings set out in the Final Application. (b) All ponds must have embankments designed and constructed to prevent erosion as a result of storm water runoff, including: (i) appropriate embankment construction material comprising natural lime or gypsum as well as sufficient compaction of soil; and (ii) batter slopes of approximately 18 degrees to maintain embankment stability. (c) All ponds must be constructed with a single layer of clay and single layer of HDPE liner and must ensure no detectable leakage from the ponds. (d) The single layer HDPE liner must meet the following specification: (i) be a minimum of 1.5 mm thickness; (ii) have permeability of less than 1 x 10-9 m/s; (iii) be durable to maintain permeability for the working life of the ponds. (iv) have specific gravity of 0.94 or more (ASTM method D1505); (v) have melt index of 0.05 g to 0.30 g in 10 minutes (ASTM method D1238; condition E 190/ 2.16); (vi) have carbon black content of 2–3% (ASTM method D1603); (vii) have minimum tensile strength at yield of 16 000 kN/m2; (viii) have minimum tensile strength at break of 550 kN/m2 (ASTM method D638, type IV 2); and (ix) have minimum elongation at yield of 10%, and at break 300% (ASTM method D638). (e) The clay liner must meet the following specification: (i) Soils used for the lining of the evaporation pond must be free from plant roots and reactive, soluble and organic matter. (ii) The liner material used for the evaporation pond must meet the following criteria: a. percentage fines with acceptability of: i. more than 25 per cent passing a 75 micron sieve; and ii. more than 15 per cent passing a 2 micron sieve,

Infrastructure Requirements Table	
Column 1	**Column 2**
Infrastructure	**Requirements (design and construction)**
	tested using AS 1289 3.6.1-2009; b. liquid limit with acceptability of 30 to 70 per cent tested using AS 1289 3.1.2-2009; c. plasticity index with acceptability of more than 15, tested using method AS 1289 3.3.1-2009; and d. Emerson class number with acceptability of 5 to 6 tested using AS 1289 3.8.1-2006. (iii) The liner material must be homogeneous in nature and properties, with no sandy patches exceeding the liner specification or rocks retained on a 37.5 mm sieve. (iv) The liner must be installed in at least two layers of equal thickness to ensure adequate compaction is achieved and be moisture-conditioned to achieve the maximum design soil density exceeding the 95 per cent maximum (in place) dry density (MDD) determined using AS 1289.5.2.1 (2003) and AS 1289 5.4.1 (2007). (v) The minimum thickness of the compacted soil liner should be 300 mm with a tolerance of 5 mm. (vi) The compacted liner must uniformly cover both the base and perimeter of the pond to achieve one integrated holding pond. (vii) The construction of the lined pond must be supervised by a competent and experienced geo-technical professional. (viii) The liner must be certified in accordance with section 17 (Liner certification) of *Water Quality Protection Note 27 – Liners for containing pollutants, using engineered soils* (August 2013). (f) An appropriate leakage detection system must be installed. (g) The ponds must be designed and constructed to be fit for purpose for receiving all effluent from the maximum number of pigs on site, and of suitable capacity allowing for: (i) subject to (ii), 500 mm freeboard at all times; and (ii) overtopping to not occur on average more than once every 10 years, consistent with section 12.1.1 of the National Guidelines.

Infrastructure Requirements Table	
Column 1	**Column 2**
Infrastructure	**Requirements (design and construction)**
Anaerobic pond	(a) The anaerobic pond must: (i) be constructed in accordance with the *Code of Practice for On-farm Biogas Production and Use (Piggeries)* 1st Edition (Prime Consulting International, 2013); (ii) have a water depth of 4 m excluding freeboard; (iii) be designed for 30 day retention; and (iv) be completely covered with an HDPE liner which will enable biogas capture and stormwater runoff collection. (b) Subject to paragraph (c) or (d), the anaerobic pond capacity must correlate to the m^3 per SPUs, as calculated in accordance with the PIGBAL model and applying: (i) a desludging assumption of every 10 years or more; (ii) freeboard of 500 mm; (iii) 90% monthly rainfall; and (iv) overtopping to not occur on average more than once every 10 years, consistent with section 12.1.1 of the National Guidelines. *This requirement may be satisfied by the Applicant increasing the capacity of the anaerobic pond or reducing the number of SPUs.* (c) Paragraph (b) does not apply if the Applicant: (i) implements a desludging system which removes sludge from the anaerobic pond on a continuous basis; and (ii) the sludge is dewatered and removed from the premises. (d) The anaerobic pond must be covered by HDPE liner that has been certified as meeting the following specifications: (i) the liner is suitably UV stabilised with demonstrated operating life within the climatic conditions for at least 10 years; (ii) the liner is suitably framed for stability; (iii) the rainwater impact on the liner is mitigated; and (iv) the liner is adequately fitted to retain biogas emissions.
Existing ponds	(a) On construction of new ponds, effluent in existing ponds must be pumped into new ponds and existing ponds must be decommissioned. (b) Prior to the construction of the new mating and dry sow sheds, the solids of the bottom of existing pond must be removed from the shed construction area and a new wall must be built constructed of compacted clay. (c) Desludging of existing ponds must not breach the pond embankment or pond lining or result in any effluent runoff.
Other treatments	(a) Acoustic treatments to be applied to the north west facing façades of the sheds except where a neighbouring shed screens the façade or that portion of the façade from the closest resident to the north west. (b) A vegetative screen must be planted to the north and west of the accommodation sheds. (c) Three rows of native dense foliage trees or shrub species must be planted along the northern and western boundaries. (d) Acoustic screening of the western side of the westernmost sheds must be constructed. (e) Openings in sheds to be ducted in accordance with specifications submitted by the Applicant. (f) Acoustic barriers and treatments to be designed and constructed to the specifications of a suitably qualified and experienced acoustic consultant. (g) Plant, machinery and vehicles must operate only between from 7am to 7pm Monday to Saturday and 9am to 7pm on Sundays and public holidays.

Records and Information

9. The Works Approval Holder must maintain accurate records including information, reports and data in relation to the Works.

10. All information and records required under this Works Approval must:

(a) be legible;

(b) if amended, be amended in such a ways that the original and subsequent amendments remain legible or are capable of retrieval; and

(c) be retained for six years after the expiry of this Works Approval.

Reports

11. If requested by the CEO from time to time, the Works Approval Holder must provide the CEO with reports or information relating to the Works, the Premises or any condition in this Works Approval (including data from any monitoring conditions, environmental risk assessment studies).

12. Reports or information must be in such form as the CEO may require in a CEO Request.

Requests for Information

13. The Works Approval Holder must comply with a CEO Request within seven days from the date of the CEO Request or such other period specified in the CEO Request.

Definitions and Interpretation

Definitions

In this Works Approval, the following terms have the following meanings:

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

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

(b) reporting, records or administrative matters:

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

(ii) which apply to specified categories of works approvals within which this Works Approval falls.

Condition means a condition to which this Works Approval is subject under s 62 of the EP Act, and as set out in section 2 of this Works Approval.

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

Works Approval refers to this document, which evidences the grant of the works approval by the CEO under s 57 of the EP Act, subject to the conditions.

Works Approval Holder refers to the occupier of the premises being the person to whom this Works Approval has been granted, as specified at the front of this Works Approval.

Interpretation

In this Works Approval:

(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 Works Approval means the version of the standard, guideline or code of practice in force at the time of granting of this Works Approval and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Works Approval.

Works Approval document history

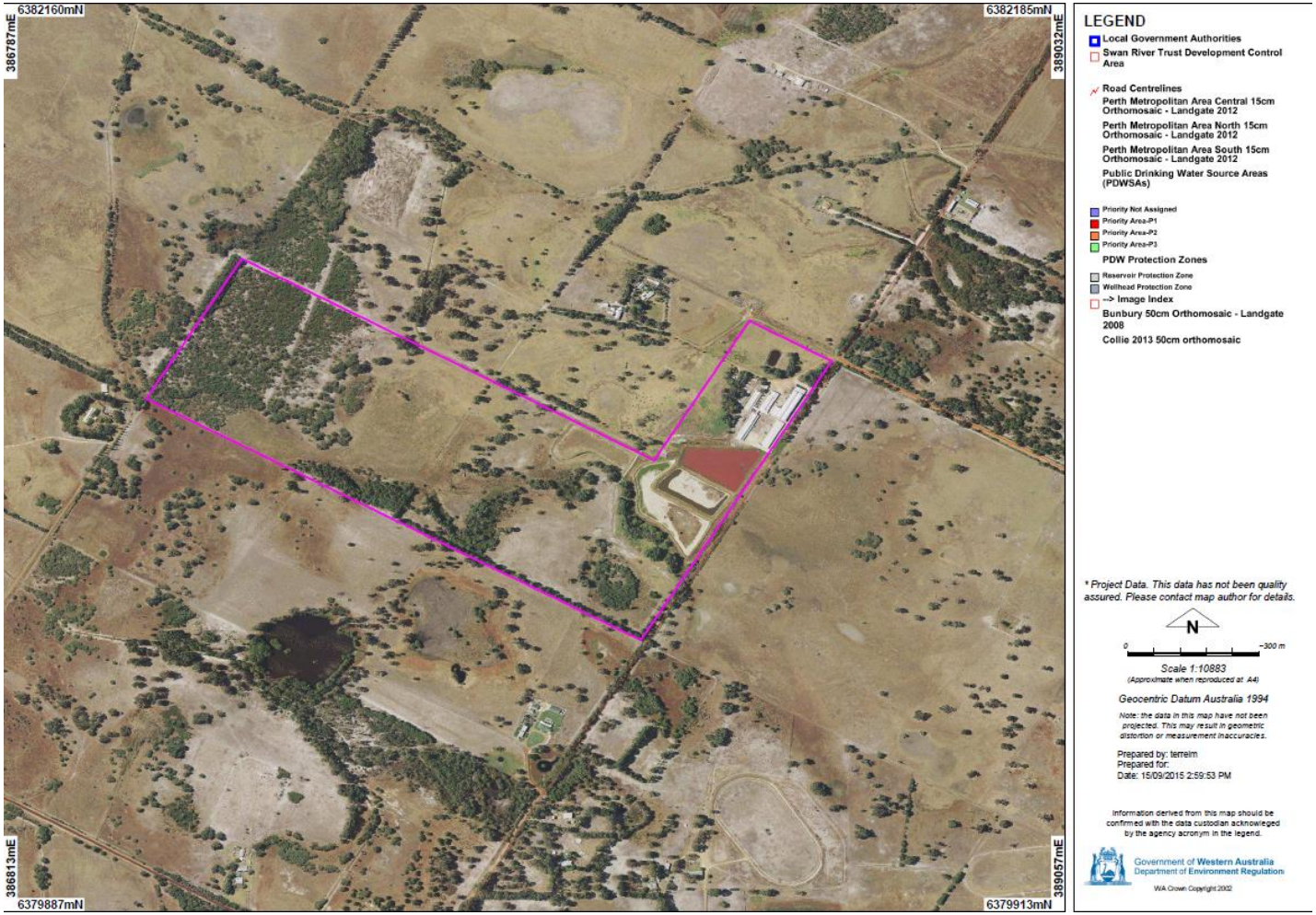
Where this Works Approval has been amended and revised Works Approvals have been issued, the document history is set out below.

Amendment Description	Date	Revision No
First issue	28 September 2015	0

Schedule 1: Maps

1. Premises Map

The Premises are shown in the map below. The pink line depicts the boundary to the Premises.



Schedule 2: Works

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

Item	Works	Specifications/Drawings
1	Extended mating shed	Layout and cross section – Mating shed extension
2	Maiden gilt shed	Layout and elevations – Gilt sheds
3	Dry sow sheds for pregnant sows	Layout and elevations – Dry sow sheds
4	Farrowing sheds	Layout and elevations – Farrowing sheds
5	Breeder shed	Layout and cross section – Mating shed extension
6	Extended boar shed	Layout and elevations 36.21 m x 11.9 m Boar shed
7	Anaerobic covered pond	Site plan – evaporation pond layout
8	Evaporation pond	Site plan – anaerobic pond layout
9	Carcass composting facility	Layout and elevations – Compost bin

Schedule 3: Site Plans

The Site Plans are shown in the following plans.

1. Site plan – General layout (2 drawings)
2. Layout and elevations – Gilt sheds (2 drawings)
3. Cross section and elevation - Gilt sheds - Ducting
4. Layout and elevations – Dry sow sheds
5. Layout and elevations – Farrowing sheds
6. Layout and cross section – Mating shed extension
7. Layout and elevations 36.21 m x 11.9 m Boar shed
8. Site plan – evaporation pond layout
9. Site plan – anaerobic pond layout
10. Layout and elevations – Compost bin

Decision Report

Works Approval application under Division 3, Part V *Environmental Protection Act 1986*

Applicant:	**GD Pork Pty Ltd (ACN 126 978 685)**
Application Number:	**W5687/2014/1 (AXX2YW)**
Premises:	**502 Sutters Lane, West Pinjarra** **SHIRE OF MURRAY** **Lot 502 on Deposited Plan 54832** **Certificate of Title Volume 2677 Folio 599** **Registered Proprietor GD Pork Holdings Pty Ltd**
Date of report:	**24 September 2015**

1. Description of the proposal

The works approval application has been submitted by GD Pork Holdings Pty Ltd (**Applicant**) for existing licensed premises situated at 502 Sutters Lane, West Pinjarra, Western Australia. The existing premises are licensed for 3,121 Standard Pig Units (SPU) under L7286/1989/10.

The Applicant is seeking approval for an increase in production to 6,854SPU.

This Decision Report is based on an assessment of the Applicant's Revised Environmental Management Plan dated 16 January 2015 (**Final Application**).

This Decision Report identifies the risks of the Final Application and the controls for these risks. In summary:

- The works approval will be granted subject to conditions reflecting the controls set out in section 6 and conditions for the works approval described in section 7; and
- Any future licence will contain likely conditions described in section 8.

2. Proposed Works

The Applicant proposes the following works:

- The following sheds, all with mechanical ventilation:
  - 1 extended mating shed
  - 1 maiden gilt shed
  - 2 dry sow sheds for pregnant sows
  - 2 new farrowing sheds
  - 1 breeder shed
  - 1 extended boar shed

- An anaerobic covered pond (Biogas Pond) (18.3ML; lined with clay and HDPE)
- An evaporation pond with three compartments (30.7ML; lined with clay and HDPE)
- A carcass composting facility

Existing wastewater treatment ponds will be reshaped and decommissioned after the construction of the anaerobic pond.

3. Planning Approval

An application was submitted with the Shire of Harvey for planning approval for expansion in November 2013 and approval was granted on 10 December 2013.

4. Consultation

DER referred the application (as it was in 2014) to the following:

- Department of Water
- Department of Agriculture and Food
- Department of Parks and Wildlife
- Peel Preservation Group Inc.
- Shire of Murray

Copies of the application on disc were provided to the Shire of Murray to allow surrounding resident's the option to access the application.

A summary of the comments received by DER is set out in the table below, together with the identification of environmental risks.

Comments received	Environmental Risk
Public Authorities and Groups	

Department of Water (DoW) 30 June 2014
DoW's recommends:
• Urban water management – drainage systems shall be designed and constructed consistent with the DoW's *Stormwater Management Manual for Western Australia* (DoW, 2004-2007)
• Environmental management – extensions to the piggery shall be designed and managed in accordance with the guidelines '*Environmental Guidelines for New and Existing Piggeries* 2000'
• It is recommended that the applicant consult DoW's Water Quality Protection Notes (WQPN):
  ○ WQPN 26: *Liners for containing pollutants, using synthetic membranes,* February 2009 (DoW, 2013); and
  ○ WQPN 39: *Ponds for stabilising organic matter,* February 2009 (DoW, 2009)
• Groundwater – the subject area is located within the Murray groundwater Area therefore, any groundwater abstracted from this area for purposes other than domestic and/or stock watering taken from the superficial aquifer is subject to licensing by DoW.
• Peel Harvey Coastal Plain catchment – the proposal is located within the Peel-Harvey catchment and the provisions of the *Environmental Protection (Peel Inlet – Harvey Estuary) Policy 1992* and the *Statement of Planning Policy No. 2.1 – the Peel-Harvey coastal Plain Catchment* (SPP 2.1) shall apply.
	• Subject area is located within the Murray groundwater area (need for DoW licence if abstraction is to occur) and Peel Harvey Coastal Plain catchment environmental protection policy.

Comments received	Environmental Risk
• It is recommended that existing remnant vegetation is retained.	
Department of Agriculture and Food (DAFWA) 1 July 2014 • Considers that the appropriate animal welfare standards will be adopted at the expanded piggery. • Measures that are to be implemented to ensure the appropriate welfare of pigs are outlined in the Standard Operating Procedures in Appendix 5. • From an animal productive perspective, a number of design elements proposed at this piggery are relatively state-of-the-art. • After a number of subsequent conversations with GD Pork, DAFWA is confident that the Pinjarra Piggery will be a state-of-the-art production facility.	None identified.
Department of Parks and Wildlife (DPAW) 7 July 2014 Initial comment to the Shire of Murray dated 18 November 2013 highlighted that the proposed carcass composting pit will be located less than 50 metres from a resource enhancement wetland. It was noted that the composting pit will have a concrete base to prevent any seepage/discharge to the groundwater. DPaW recommended the composting pit be located a minimum of 50 metres from the wetland. The composting pit has subsequently been moved to a location more than 50 metres from the Resource Enhancement Wetland boundary, thus satisfying previous recommended advice. DPAW has no additional comment.	Proximity to Resource enhancement Wetland boundary.
Peel Preservation Group Inc. 14 July 2014 Emphasises the importance of: • The ponds having high quality plastic liners, and which must be built above the winter water tables. • Consideration to be given to completely sealing the ponds to trap the methane gas for use to generate power for piggery use. This would reduce the carbon footprint and reduce odour complaints. • All affluent and contaminated water drainage to be above ground level so that no seepage is allowed to reach the water table. • Bores sunk to test for contamination of the water table should be tested independently at least twice per year. • A sufficiently large vegetation buffer zone around the entire property should be sufficient to act as an odour buffer and reduce any noise reaching neighbouring properties. • Sufficient trees planted in the area will also assist in capturing any nutrient that might escape into the ground around the area.	• Impact of methane gas on the carbon footprint and on odour. • Nutrient seepage to groundwater table. • Odour and noise impacts on neighbouring properties.
Shire of Murray – No comments submitted to DER	N/A
Surrounding residential premises	
8 individual submissions were received.	• Odour and amenity impacts on nearby residents. • Noise and dust impacts. • Surface and groundwater contamination. • Increase in pests and vermin.

Comments received	Environmental Risk
	• Impact on Peel Estuary. • Impact on wildlife.
Community submission.	• Groundwater pollution. • Pests and vermin issues. • Odour impacts. • Noise impacts. • Dust impacts from traffic to and from the piggery. • Increase in stable flies.

5. Location and Siting

5.1 People

The draft *Guidance Statement: Separation distances* provides:

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 Refer to "Level 1 only of the National Environmental Guidelines for Piggeries" (Australian Pork Limited, 2010)

The separation distance measured using Method 2 – Activity boundary to activity boundary (the rural method) as detailed in the Draft *Guidance Statement: Separation Distance*. Based on EPA Victoria; Guideline: Recommended separation distances for industrial residual air emissions.

5.1.1 Noise

Sensitive Receptor	Distance from Prescribed Premises
Residential dwelling	300 m to the north west
Application of draft Guidance Statement: Separation distance	Three dwellings are located within 1,000 m from the piggery (sheds).

5.1.2 Odour

Factors	Rural Dwelling	Rural Residential	Town
Actual Distance (m)	300 m	N/A	7,900 m
Applicant calculation (based on Level 1)	601 m	N/A	N/A
Application of draft Guidance Statement: Separation distance	Three dwellings are located within 600 m from the piggery (sheds).	N/A	Exceeds recommended separation distance

Relevant information: The Applicant provided DER with part of the minutes of the Shire of Murray Planning and Development Services Committee Meeting of 17 October 2006. Those minutes considered the subdivision and amalgamation of Lots 127 and 128 Sutters Lane to realign the property boundary to include the wastewater ponds within the same lot as the piggery operations. With the realignment, the existing house located on the piggery was excluded from lot, becoming a stand-alone lot no longer associated with the piggery operations. This house is the closest dwelling to the Premises, being 300 m from the premises. The Committee recommended that a memorial under section 165 of the *Planning and Development Act 2005* be placed on the certificate of titles of the proposed lots advising of the existence of a hazard or other factor. The Committee noted that the lot is in close proximity to a piggery and the property may be affected by odours from the piggery. A copy of the Committee recommendation is set out in Attachment 1.

The planner's report dated 11 August 2006 (set out in Attachment 2), sets out a recommendation to the Western Australian Planning Commission (WAPC) regarding the proposed subdivision. On the issue of the memorial, the planner considered that this would not be an appropriate requirement as the existence of the piggery is apparent upon inspection of the land.

DER considers the above information relevant to the risks of odour to nearby residences.

5.2 Sensitive ecosystems

Sensitive ecosystems	Distance from Prescribed Premises
Conservation category wetland	Approximately 1,740 west of the premises boundary.
Resource enhancement and multiple use wetlands	Located within the prescribed premise boundary. Five wetlands located within 1,000m surrounding the premises boundary (2 to the north, 2 to the south and 1 to the southwest). Multiple use wetland within the premises boundary.
Ramsar wetland, Peel-Yalgorup System (Peel Inlet and Harvey Estuary)	Approximately 7,500 m north northwest of the premises boundary. Three major drains begin from within the premises boundary and flow in a north-west direction. These drains connect to the Coolup Main Drain (located approximately 340 m from the premises boundary and 640 m from the existing ponds) that runs into the Peel Inlet.

5.3 Groundwater and water sources

Groundwater and water sources	Distance from Prescribed Premises
Wetland as receptor (ecosystem)	Multiple use category wetland located within the prescribed premises boundary. A resource enhancement wetland is located within the prescribed premises boundary in the southern corner and another to the northwest 30m from the boundary (wetlands likely to be inter-connected).
Bore users (public health)	A bore identified as domestic/household is located approximately 238 m north of the premises boundary. A number of other bores are located within a 1 km radius of the premises.
Designated area (as defined in s.57 of the EP Act).	The premises are located within proclaimed area declared under *Rights in Water and Irrigation Act 1914*.

6. Risks to amenity, public health or environment

The table below sets out the risks arising from the application. These risks are then assessed taking into account the controls proposed by the Applicant. The regulatory controls corresponding to these risks are set out in section 7.

	Emission source	Emission (type and quantity)	Pathway	Receptor	Proponent controls	Consequence	Likelihood	Risk Rating
1.	Seepage from waste water ponds and carcass composting facility	Nutrient rich wastewater (N: 50,110kg/yr. and P: 12,259 kg/yr.) generated from intensive piggery (16,469 L/d) treated and stored in anaerobic pond and evaporative ponds	Emission to land or waters Bassendean Dune System derived soils with depth to groundwater recorded 80cm during highest winter water table levels (reported through licence monitoring). Groundwater direction reported to flow in north westerly direction	Multiple use category wetland located within the prescribed premises boundary. A resource enhancement wetland is located within the prescribed premises boundary in the southern corner and to the north west 30 m from the boundary (wetlands inter-connected) A bore identified as domestic/household is located approximately 238 m north of the premises. A number of other bores are located within a 1 km radius of the premises	Maintaining a minimum separation distance of 1 m from the base of the pond and highest groundwater level HDPE lined waste water ponds (WQPN 27) & concrete composting facility Seepage assessment of the ponds following installation Monitoring bores up and down gradient Six monthly monitoring of bores (range parameters including nutrients)	Moderate	Possible	Moderate risk of seepage entering groundwater causing eutrophication of wetlands or impacting quality of water for bore users

	Emission source	Emission (type and quantity)	Pathway	Receptor	Proponent controls	Consequence	Likelihood	Risk Rating
2.	Containment failure	Nutrient rich wastewater (N: 50,110 kg/yr and P: 12,259 kg/yr) generated from intensive piggery (16,469 L/d) treated and stored in anaerobic pond and evaporative ponds	Emission to land or waters Tributaries to the Coolup Main Drain run through and from the prescribed premises boundary	The Coolup Main Drain runs to the Peel-Yalgorup System. Ramsar wetland. Wetlands – Multiple use and Resource Enhancement wetlands located to the west	Maintaining separation (min 50m) to resource enhancement wetlands Sizing of ponds based on water balance (PigBal), maintaining 500mm freeboard and 1 in 100 72 hr. event. Operational - maintaining 500 mm freeboard	Moderate	Possible	Moderate risk of overflow which would allow nutrient rich wastewater to enter environment
3.	Stormwater from operational areas (sheds, walkways, carcass composting facility)	Nutrient-rich stormwater containing elevated levels of nutrients and pathogens.	Emission to land or waters Tributaries to the Coolup Main Drain run through and from the prescribed premises boundary	The Coolup Main Drain runs to the Peel-Yalgorup System. Ramsar wetland. Wetlands – Multiple use and Resource Enhancement wetlands located to the west	Effluent collection system Daily inspection of effluent collection system Potentially contaminated runoff from composting facility directed to ponds	Minor	Possible	Moderate risk of contaminated stormwater entering the surrounding environment
4.	Acid Sulfate Soils (ASS)	Premises is located on an area mapped with moderate to low risk of ASS	Emission to land or waters Depth to groundwater is between 0.8 - 5 m	Multiple use category wetland located within the prescribed premises boundary. A resource enhancement wetland is located within the prescribed premises boundary in the S corner and to the NW 30m from the boundary (wetlands inter-connected)	Minor excavation and no dewatering Groundwater will be monitored prior to, during and after construction	Moderate	Unlikely	Minor risk of disturbing soils during construction causing sulfides to react with oxygen forming sulfuric acid

	Emission source	Emission (type and quantity)	Pathway	Receptor	Proponent controls	Consequence	Likelihood	Risk Rating
5.	Biogas capture and discharge through the anaerobic digestion	Biogas is a mixture of gases consisting of methane, carbon dioxide, hydrogen sulfide and traces of ammonia, hydrogen, nitrogen and carbon monoxide	Emission to air Odour emissions move with direction of wind	340 m to the west northwest - using method 2 from proposed sheds 550 m to the north northeast - using method 2 from the proposed primary wastewater pond 800 m to the south west – using method 2 from the existing shed	High quality impermeable liner Biogas produced will be captured and flared Visual inspection of cover and flare will be undertaken daily	Minor	Possible	Moderate risk of impact on amenity of residents
6.	Odour generated through accommodation sheds and the breakdown of biological material through evaporative ponds and carcass compositing facility	Odour	Emission to air Odour emissions move with direction of wind	340 m to the west northwest - using method 2 from proposed sheds 550 m to the north northeast - using method 2 from the proposed primary wastewater pond 800 m to the south west – using method 2 from the existing shed	The effluent system Tunnel ventilation of the sheds An Odour Management and Monitoring Plan has been prepared	Moderate	Possible	Moderate risk of odour affecting public amenity
7.	Noise generated through intensive farming of pigs, movement/delivery of pigs and plant and equipment at the premises	Noise	Emission to air Transmission through air	340 m to the west northwest - using method 2 from proposed sheds 550 m to the north northeast - using method 2 from the proposed primary wastewater pond 800 m to the south west – using method 2 from the existing shed.	Sheds will be insulated Stress of animals will be minimal as a result of readily available feeding	Minor	Possible	Moderate risk of nuisance and disturbance for residents

7. Regulatory Controls

This section sets out regulatory controls. The controls correlate to the risks identified in section 5 as set out in the table below.

		Controls (see sections below)									
		7.1 Siting	7.2 Ambient groundwater	7.3.1 Waste water treatment system	7.3.2 Water collection and runoff	7.3.3 Sheds	7.3.4 Carcass Composting facility	7.3.5 Ponds	7.4 Anaerobic Pond	7.5 Decommissioning existing ponds	7.6 Other treatments
Risk Items (see section 6)	1. Seepage risk to groundwater and wetlands	●	●	●		●	●	●	●	●	
	2. Containment failure risk to environment	●	●	●				●	●		
	3. Contaminated stormwater entering the environment				●						
	4. Acid Sulfate Soils	Low risk. No controls required.									
	5. Biogas odour affecting public amenity								●		
	6. Odour affecting public amenity			●		●	●	●	●	●	
	7. Noise affecting public amenity					●					●

Controls comprise of:

- key elements of the infrastructure as set out in the Final Application; and
- the Chief Executive Officer's (**CEO**) requirements which are necessary and convenient to ensure that the activities pose an acceptable level of risk to public health and the environment.

CEO requirements have been identified at the end of each specification.

7.1 Siting

7.1.1 Groundwater

(a) All sheds must have a minimum 2 m separation to groundwater.
(b) All ponds must have a minimum 2 m separation to groundwater.
(c) Carcass composting facility must have a minimum 2 m separation to groundwater.
(d) Exact distances to groundwater must be certified prior to commencement of construction.
(e) Where the clearances do not exist at ground level, the Applicant must with engineered certification, elevate the area to attain the adequate separation distances.

Separation to groundwater refers to the vertical separation of the infrastructure calculated from the underside of the lowest point to the highest point of the highest seasonal water table.

7.1.2 Wetlands

All ponds and piggery infrastructure must be located at least 50 m from conservation category wetlands and resource enhancement wetlands.

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

7.2 Ambient groundwater monitoring

(a) New monitoring bores must be installed prior to the commencement of works and maintained until the completion of works.
(b) Three new groundwater monitoring bores must be installed which meet the requirements of *Minimum Construction Requirements for Water Bores in Australia* (AIH 2012).
(c) New groundwater monitoring bores must be sited in accordance with the Department of Water *Water Quality Protection Note 30 Groundwater Monitoring Bores* (DoW 2009).
(d) New groundwater monitoring bores must be sited with the Chief Executive Officer's (CEO) approval:
    (i) one up-gradient of the infrastructure;
    (ii) one down-gradient of the infrastructure; and
    (iii) one adjacent to the boundary of the resource enhancement wetland.
(e) New groundwater monitoring bores must be surveyed to allow the ground level (to Australian Height Datum) at each location be accurately determined.

7.3 Infrastructure specifications

7.3.1 Wastewater treatment system

Wastewater treatment system must be designed and constructed so as to meet the following specifications:

(a) inlets will be well separated from outlets with distances to be specified;
(b) ensure all wastewater from piggery sheds is directed to the wastewater treatment system by impermeable PVC piping;
(c) ensure all wastewater transfers within the wastewater treatment system are via impermeable PVC piping;
(d) all components of the effluent system to be constructed above ground level with exclusion of piping between sheds and effluent ponds;
(e) employ pull and plug systems for all sheds, as described in Appendix G of the Final Application, comprising of impermeable, corrosion resistant and sturdy underfloor pits;
(f) include an electrical effluent pump triggered by a float switch which detects effluent in the sump and pumps to treatment ponds;
(g) submerged outlet leading into the sump;
(h) sump pit 5.2 m x 5.2 m x 1.75 m deep, having a capacity of 47.32 m^3, engineered with 250 mm thick concrete walls and floor, with reinforcing steel and 32 MPA concrete;
(i) inlet pipes to sump pit to be located at least 590 mm below the top of the sump pit;
(j) pump of at least 5,600 litre/minute capacity to pump effluent into the covered anaerobic pond;
(k) high velocity pumps must be used to ensure solids are kept in suspension; and
(l) pumps must be switchable to manual control.

7.3.2 Water collection and runoff

(a) Rainfall from shed rooftops will be collected and directed into below ground soak-wells for direct infiltration into the soil.
(b) All concrete laneways must be covered by skillion roof with drainage along the laneways draining to effluent pits under the sheds.
(c) Grounds between sheds must be covered: 20 mm blue metal.
(d) Surface water diversion system must be implemented to ensure that surface water around piggery infrastructure is diverted from existing drains on the premises.

7.3.3 Sheds

(a) All sheds must have concrete pits underneath to enable pull and plug system.
(b) All new sheds must be fully enclosed with mechanical ventilation.
(c) All new sheds must have slatted concrete floor and pens.
(d) New sheds must be constructed surrounding retained existing sheds to act as a noise buffer.
(e) Replacement breeder shed must have feed dispensers enabling feed ad libitum.

7.3.4 Carcass composting facility

(a) Carcass composting hardstand must be constructed of concrete with a minimum thickness of 150 mm of 32 MPA concrete and bunded to prevent runoff.
(b) Size of the composting floor area to be at least 450 m^2.
(c) Runoff system must be designed and constructed to collect all runoff into impermeable piping directed to concrete collection pit.
(d) Collection pit must contain submersible pump with float switch to pump run off into the anaerobic pond.
(e) Impermeable PVC piping must connect the composting facility to the anaerobic pond.
(f) Composting area must be fenced to prevent feral animals entering the facility.

7.3.5 Ponds

(a) All ponds must be designed and constructed to the dimensions specified in the drawings set out in the Final Application.
(b) All ponds must have embankments designed and constructed to prevent erosion as a result of storm water runoff, including:
    (i) appropriate embankment construction material comprising natural lime or gypsum as well as sufficient compaction of soil; and
    (ii) batter slopes of approximately 18 degrees to maintain embankment stability.
(c) All ponds must be constructed with a single layer of clay and single layer of HDPE liner and must ensure no detectable leakage from the ponds.
(d) The single layer HDPE liner must meet the following specification:
    (i) be a minimum of 1.5 mm thickness;
    (ii) have permeability of less than 1 x 10-9 m/s;
    (iii) be durable to maintain permeability for the working life of the ponds.
    (iv) have specific gravity of 0.94 or more (ASTM method D1505);
    (v) have melt index of 0.05 g to 0.30 g in 10 minutes (ASTM method D1238; condition E 190/ 2.16);
    (vi) have carbon black content of 2–3% (ASTM method D1603);
    (vii) have minimum tensile strength at yield of 16 000 kN/m2;
    (viii) have minimum tensile strength at break of 550 kN/m2 (ASTM method D638, type IV 2); and
    (ix) have minimum elongation at yield of 10%, and at break 300% (ASTM method D638).
(e) The clay liner must meet the following specification:
    (i) Soils used for the lining of the evaporation pond must be free from plant roots and reactive, soluble and organic matter.

(ii) The liner material used for the evaporation pond must meet the following criteria:
   a. percentage fines with acceptability of:
      i. more than 25 per cent passing a 75 micron sieve; and
      ii. more than 15 per cent passing a 2 micron sieve, tested using AS 1289 3.6.1-2009;
   b. liquid limit with acceptability of 30 to 70 per cent tested using AS 1289 3.1.2-2009;
   c. plasticity index with acceptability of more than 15, tested using method AS 1289 3.3.1-2009; and
   d. Emerson class number with acceptability of 5 to 6 tested using AS 1289 3.8.1-2006.

(iii) The liner material must be homogeneous in nature and properties, with no sandy patches exceeding the liner specification or rocks retained on a 37.5 mm sieve.

(iv) The liner must be installed in at least two layers of equal thickness to ensure adequate compaction is achieved and be moisture-conditioned to achieve the maximum design soil density exceeding the 95 per cent maximum (in place) dry density (MDD) determined using AS 1289.5.2.1 (2003) and AS 1289 5.4.1 (2007).

(v) The minimum thickness of the compacted soil liner should be 300 mm with a tolerance of 5 mm.

(vi) The compacted liner must uniformly cover both the base and perimeter of the pond to achieve one integrated holding pond.

(vii) The construction of the lined pond must be supervised by a competent and experienced geo-technical professional.

(viii) The liner must be certified in accordance with section 17 (Liner certification) of *Water Quality Protection Note 27 – Liners for containing pollutants, using engineered soils* (August 2013).

(f) An appropriate leakage detection system must be installed.

(g) The ponds must be designed and constructed to be fit for purpose for receiving all effluent from the maximum number of pigs on site, and of suitable capacity allowing for:
   (i) subject to (ii), 500 mm freeboard at all times; and
   (ii) overtopping to not occur on average more than once every 10 years, consistent with section 12.1.1 of the National Guidelines.

7.4 Anaerobic Pond

(a) The anaerobic pond must:
   (i) be constructed in accordance with the *Code of Practice for On-farm Biogas Production and Use (Piggeries)* 1st Edition (Prime Consulting International, 2013);
   (ii) have a water depth of 4 m excluding freeboard;
   (iii) be designed for 30 day retention; and
   (iv) be completely covered with an HDPE liner which will enable biogas capture and stormwater runoff collection.

(b) Subject to paragraph (c) or (d), the anaerobic pond capacity must correlate to the m^3 per SPUs, as calculated in accordance with the PIGBAL model and applying:
   (i) a desludging assumption of every 10 years or more;
   (ii) freeboard of 500 mm;
   (iii) 90% monthly rainfall; and
   (iv) overtopping to not occur on average more than once every 10 years, consistent with section 12.1.1 of the National Guidelines.

   This requirement may be satisfied by the Applicant increasing the capacity of the anaerobic pond or reducing the number of SPUs.

(c) Paragraph (b) does not apply if the Applicant:

(i) implements a desludging system which removes sludge from the anaerobic pond on a continuous basis; and
(ii) the sludge is dewatered and removed from the premises.

(d) The anaerobic pond must be covered by HDPE liner that has been certified as meeting the following specifications:
(i) the liner is suitably UV stabilised with demonstrated operating life within the climatic conditions for at least 10 years;
(ii) the liner is suitably framed for stability;
(iii) the rainwater impact on the liner is mitigated; and
(iv) the liner is adequately fitted to retain biogas emissions.

7.5 Decommissioning of existing ponds

(a) On construction of new ponds, effluent in existing ponds must be pumped into new ponds and existing ponds must be decommissioned.
(b) Prior to the construction of the new mating and dry sow sheds, the solids of the bottom of existing pond must be removed from the shed construction area and a new wall must be built constructed of compacted clay.
(c) Desludging of existing ponds must not breach the pond embankment or pond lining or result in any effluent runoff.

7.6 Other treatments

(a) Acoustic treatments to be applied to the north west facing façades of the sheds except where a neighbouring shed screens the façade or that portion of the façade from the closest resident to the north west.
(b) A vegetative screen must be planted to the north and west of the accommodation sheds.
(c) Three rows of dense native foliage trees or shrub species must be planted along the northern and western boundaries.
(d) Acoustic screening of the western side of the westernmost sheds must be constructed.
(e) Openings in sheds to be ducted in accordance with specifications submitted by the Applicant.
(f) Acoustic barriers and treatments to be designed and constructed to the specifications of a suitably qualified and experienced acoustic consultant.
(g) Plant, machinery and vehicles must operate only between from 7am to 7pm Monday to Saturday and 9am to 7pm on Sundays and public holidays.

8. Conditions for the works approval

Controls will be conditioned in the works approval instrument by:

- a condition specifying that prior to commencement of the works, the Applicant will be required to provide the CEO with engineered certification that the drawings and systems comply with the relevant controls; and
- a condition specifying that on completion of the works, the Applicant will be required to provide the CEO with engineered certification that the as built works comply with the relevant controls.

9. Conditions for the licence

Given the sensitive environmental receptors, a destocking requirement will be included as a condition in the licence which will require the licensee to reduce the number of SPUs if the CEO has substantiated that odour emissions are adversely affecting public amenity. Reduction requirements may be issued from time to time but will not exceed 10% of stock at any one time, and will not reduce stock to lower than 4,032 SPUs as a total maximum.

In addition, to mitigate the risk to groundwater, the licence will require that ponds must maintain water levels greater than groundwater levels to ensure positive pressure on the liners from within the ponds are maintained.

Any future licence will require the evaporation ponds to be maintained at volumes of less than 1m. Where the volume limit has been exceeded, the licence may require specified management actions to be taken.

The licence will also include conditions regarding the flaring of biogas, noise and odour management and monitoring, as well as no solids storage or disposal onsite.

10. Conclusion

Based on the assessment of the Final Application and the environmental impacts that may result from the proposal to expand the piggery, it has been determined that a Works Approval will be granted that is subject to the regulatory controls and conditions outlined in this assessment report to mitigate the identified environmental risks.

Date signed: 24 September 2015

Kelly Faulkner
Executive Director Licensing and Approvals
delegated Officer under section 20 of the *Environmental Protection Act 1986*