Government of Western Australia
Department of Environment Regulation

Works Approval

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

Works Approval Number	W5865/2015/1 Number/Year issued/Version (for amendments or renewals)	
Works Approval Holder	GD Pork Pty Ltd Full legal name	126 978 676 ACN Number
Registered business address	Level 3, 35 Outram Street WEST PERTH WA 6005	
Address for notifications If different to registered address	38 Victoria Circle GREENFIELDS WA 6210	
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 27,360 animals (28,368 Standard Pig Units (SPU)) Production/Design Capacity	
Premises	Lot 10 on Plan 23562 Certificate of Title Volume 2173 Folio 889 Corner of Albany Highway and Crapella Road BOSCABEL WA 6394 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 28 September 2015 by:

_____

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 10 Crapella Road, Boscabel WA 6394.

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 operate an intensive piggery comprising:

- Nine tunnel/curtain ventilated finisher piggery sheds;
- 36 extensive deep litter sheds;
- Waste treatment plant consisting of a feed tank, enclosed digester, and biogas reuse system (engines and flare);
- An evaporation pond with two compartments (33,725 m3; lined with clay);
- Stormwater detention basins; and
- Silos, liquid feed shed facilities, feed mill;

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 10 Crapella Road BOSCABEL WA 6394	Lot 10 on Plan 23562 Certificate of Title Volume 2173 Folio 889

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	The evaporation pond and piggery infrastructure (with the exception of stormwater dams) 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.*
Finisher Sheds	The wastewater treatment system must be designed and constructed so as to meet the following specifications: (a) Finisher sheds must comprise slatted concrete floors and contain continuous feeding system to all animals within the shed. (b) Employ pull and plug systems for all finisher sheds, as described in the Environment Management Plan, comprising of impermeable, corrosion resistant and sturdy underfloor pits and covered concrete collection sump. (c) Ensure all wastewater and slurry from the intensive piggery sheds is directed to the wastewater treatment plant by 300mm diameter impermeable PVC piping. (d) Ensure all waste storage and treatment areas are constructed from impermeable concrete hardstand.
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.

Infrastructure Requirements Table	
Column 1	**Column 2**
Infrastructure	**Requirements (design and construction)**
Evaporation Pond	(a) The evaporation pond must have a minimum 2m separation to groundwater. (b) Exact distances to groundwater must be certified prior to commencement of construction. *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.* (a) The evaporation pond to be constructed in accordance with the documentation provided through the application and supporting documentation and to meet the following specifications: (i) minimum internal capacity of 33,725 m^3; (ii) minimum surface area of 36,000 m^2; (iii) minimum length at crest of 360 m; (iv) minimum width at crest of 100 m; (v) internal batter not exceeding 1:2.5 (horizontal:vertical); and (vi) maximum water depth of 1m (not including freeboard). (b) Soils used for the lining of the evaporation pond must be free from plant roots and reactive, soluble and organic matter. (c) The liner material used for the evaporation pond must meet the following criteria: (i) percentage fines with acceptability of: (a) more than 25 per cent passing a 75 micron sieve; and (b) more than 15 per cent passing a 2 micron sieve, tested using AS 1289 3.6.1-2009 (ii) liquid limit with acceptability of 30 to 70 per cent tested using AS 1289 3.1.2-2009. (iii) plasticity index with acceptability of more than 15, tested using method AS 1289 3.3.1-2009. (iv) Emerson class number with acceptability of 5 to 6 tested using AS 1289 3.8.1-2006. (d) 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. (e) 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). (f) The minimum thickness of the compacted soil liner should be 300 mm with a tolerance of 5 mm. (g) The compacted liner must uniformly cover both the base and perimeter of the pond to achieve one integrated holding pond. (h) The construction of the lined pond must be supervised by a competent and experienced geo-technical professional. (i) 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).

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; and (ii) two down-gradient of the infrastructure; (e) New groundwater monitoring bores must be surveyed to allow the ground level (to Australian Height Datum) at each location be accurately determined.

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

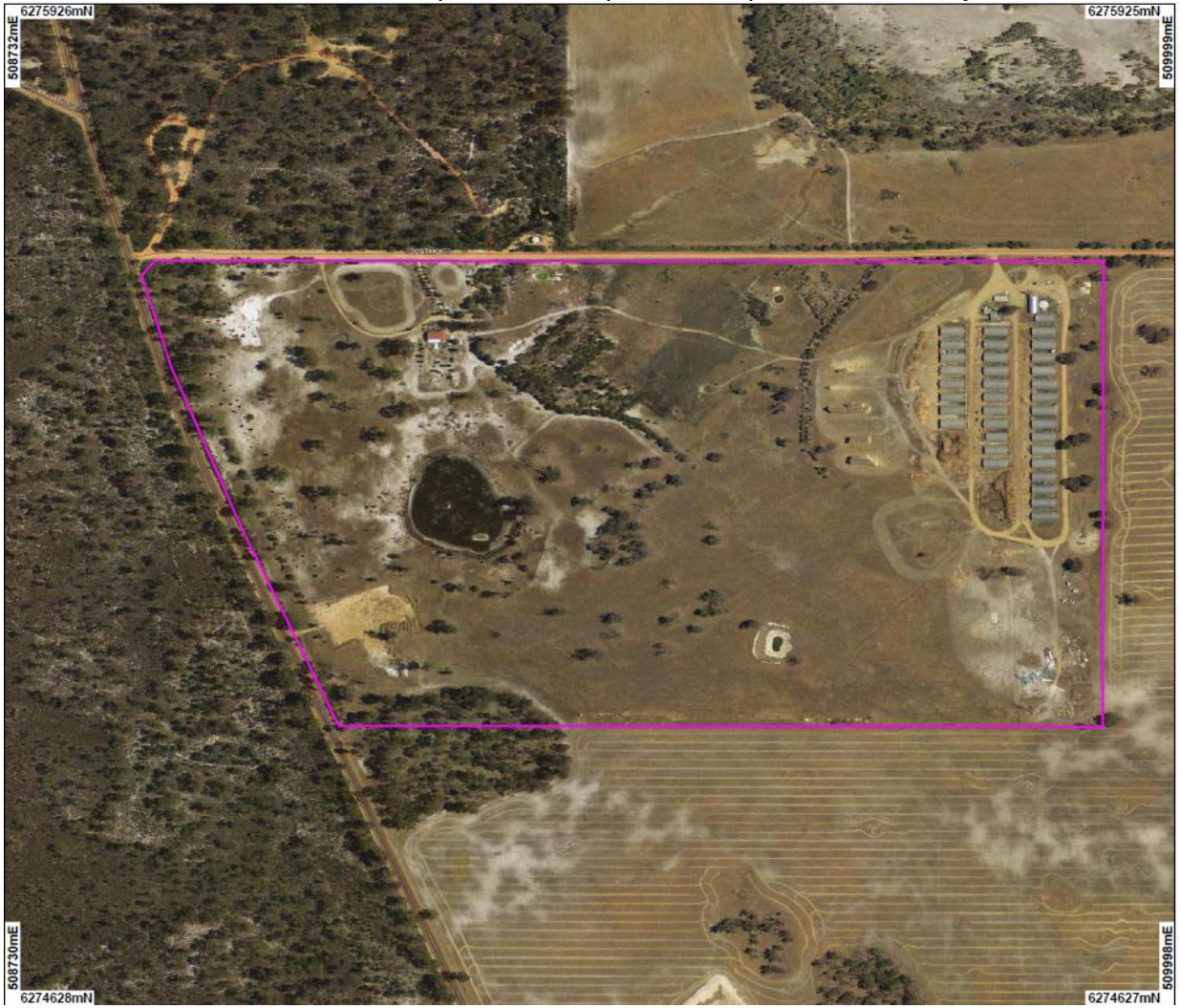
Where this Works Approval has been amended and revised Works Approvals have been issued, the document history is set out below.

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

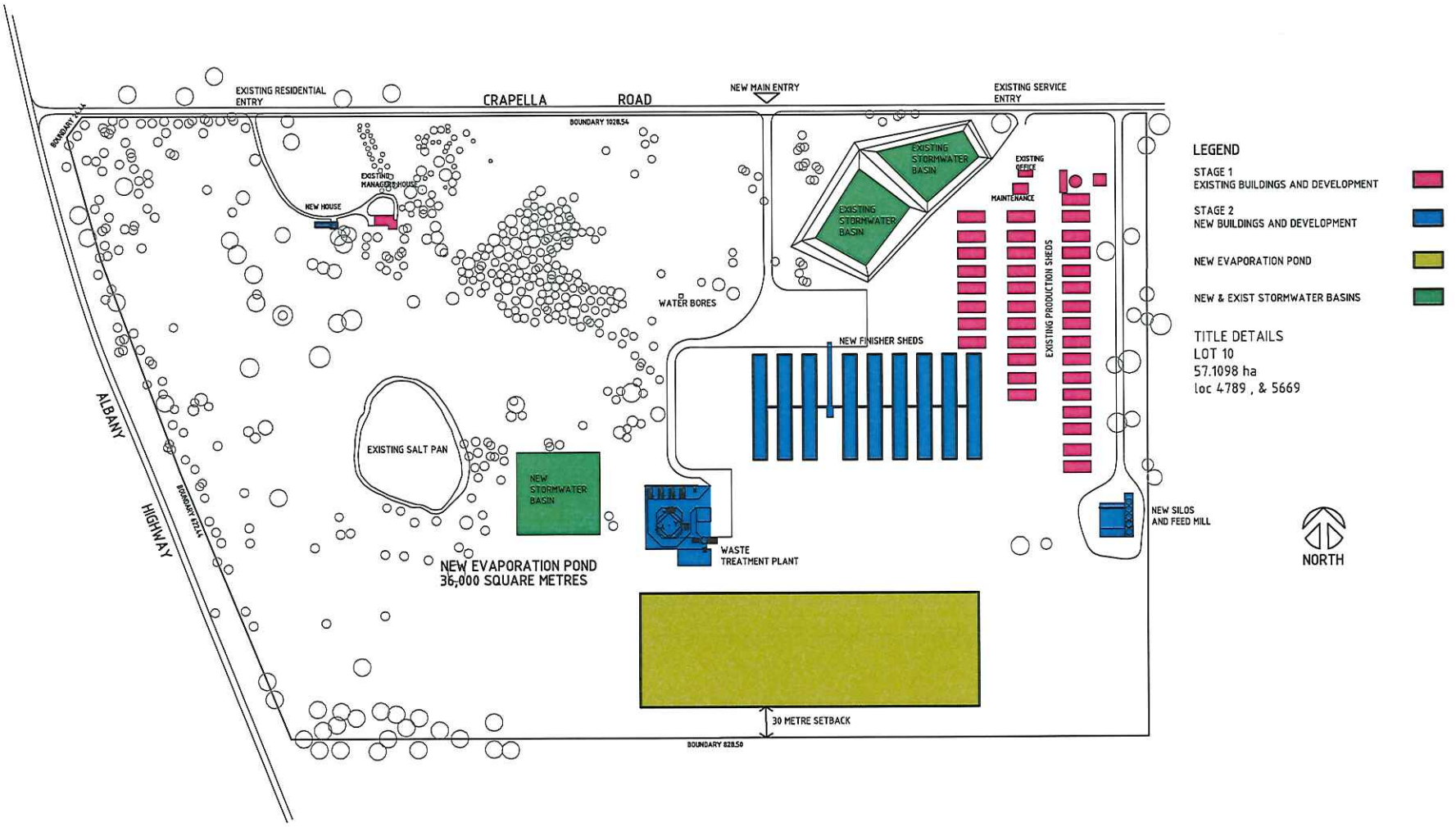
The Works to be carried out on the Premises are specified in the table below:

Item	Works	Specifications/Drawings
1	Nine Finisher Sheds	9 standard colorbond Surfmist buildings each 13.0 m wide and 101.5 m long (measured inside) placed North-South and connected with a 2.5 m wide passage (18 fully separated sections). Each section contains a total of 36 pens in 2 rows each 6.0 m deep and 2.75 m broad. Plan - Site plan general layout Plan - Layout and Elevations 102m x 13.1m Finisher Shed
2	Waste Treatment Plant	Initial collection tank (feeding tank) – constructed from 316L stainless steel; total capacity 115m^3; available capacity 96m^3; shredder; effluent/solids separator. Digester tank - diameter 23m; total height 6m; effective height 5.3m; available volume 2,492m^3; estimated total time of retention of 25 days; constructed from 316L stainless steel; insulated; elastic gasometrical dome cover; effluent/solids separator. Gas treatment system; 2x200kW gas engines; biogas combustion flare. Plan - Waste Treatment Plant General Layout Plan - Waste Treatment Plant Elevations
3	Evaporation Pond	Depth ex freeboard 1 m (freeboard 0.5 m) Length at crest 360 m; width at crest 100 m Internal Batter 2.5 :1 Surface area 36,000 m2 Internal capacity 33,725 m3 Lined with a clay to a permeability less than 1x10^{-9}m/s Plan - Pond Layout Plan Plan - Pond Layout – Details
4	Feed Mill	Equipment will be place inside a shed and on a 200mm thick concrete floor: • weighbridge and grain intake placed adjacent to shed; • 1,400 tonne of grain and meal storage silos placed adjacent to shed; • a 10 tonne per hour grinder placed inside the shed; • minerals and vitamins dosing system placed inside the shed; • a mixer placed inside the shed; • 297 tonne ready-made feed silos placed adjacent to shed; and • a control room Plan - 10Tp/h Mash mill Layout
5	Stormwater Pond	Depth ex freeboard 2.5m (freeboard 0.5m) Length at crest 8 m Width at crest 80m Internal Batter 2.5 :1 Surface area 6,400 m^2 Internal capacity 13,598 m^3

Schedule 3: Site Plans

The Site Plans are shown in the following plans.

1. Site plan general layout
2. Layout and Elevations 102m x 13.1m Finisher Shed
3. Waste Treatment Plant General Layout
4. Waste Treatment Plant Elevations
5. Pond Layout Plan
6. Pond Layout – Details
7. 10Tp/h Mash Mill Layout



REV.	DATE	AMENDMENT/ISSUE
A	25.06.14	ISSUED FOR COMMENT

JEFF FREEMAN ARCHITECTS

GD PORK

APPROVED BY:_____

GD PORK
CRAPELLA ROAD
KOJONUP

DRAWING TITLE: SITE PLAN GENERAL LAYOUT

DRAWN	JF	DESIGNED	JF
CHECKED	EP		
APPROVED	JF		
SCALE	AS SHOWN @ A1	DATE	JANUARY 2015
JOB No.	-	FILE No.	-

DRAWING No. A00-00 A

REVISION

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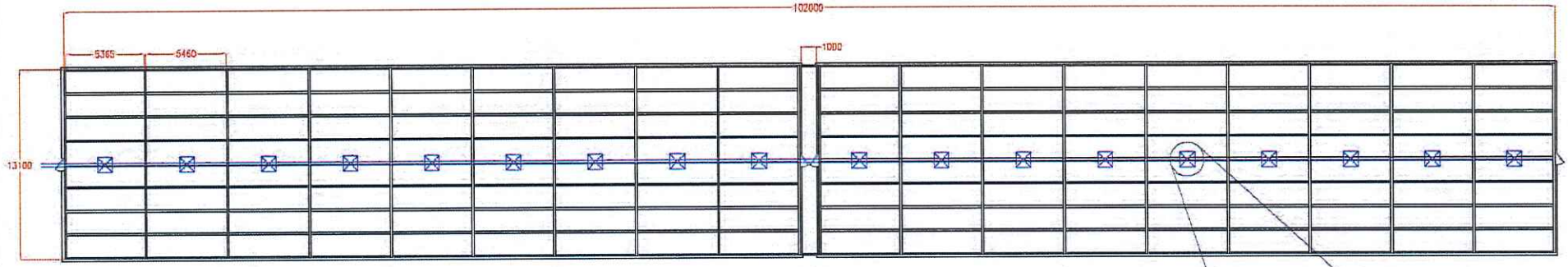
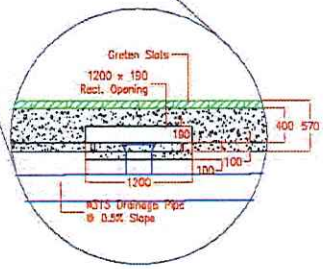
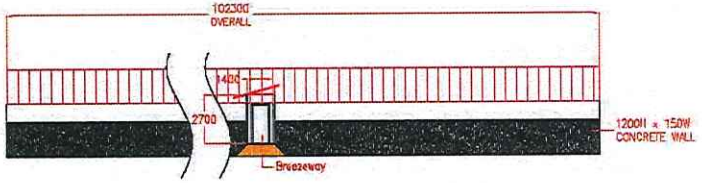


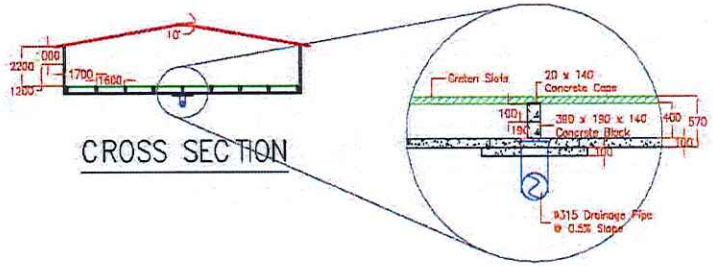
LAYOUT





SIDEWALL ELEVATION

ENDWALL ELEVATION

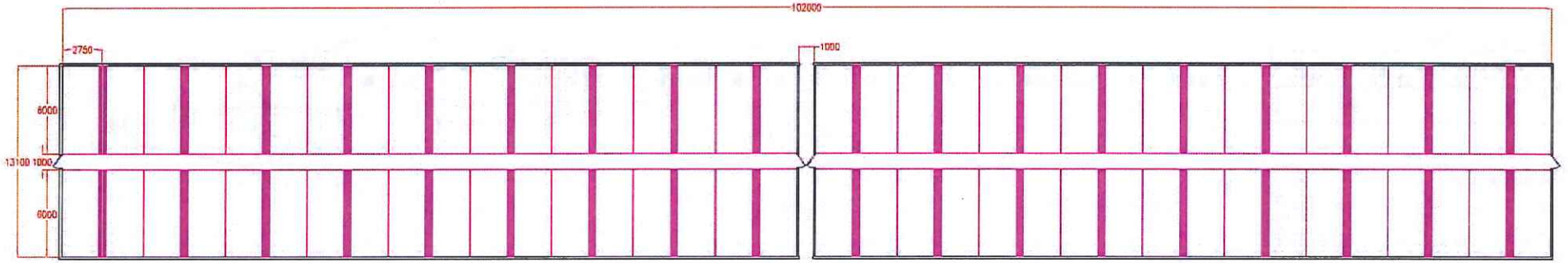


CROSS SECTION

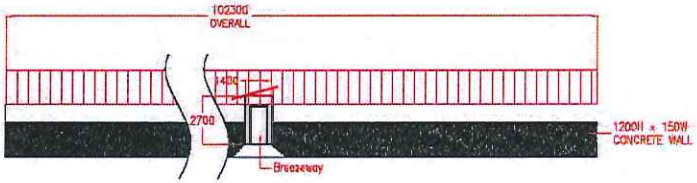
STOCKING DETAILS

PEN SIZE	6000mmL x 2750mmW x 1000mmH
No. OF PENS	72 per Shed
PIGS PER SHED	1440
AREA PER PIG	0.75m²
ENTRANCE WEIGHT	30Kgs
EXIT WEIGHT	100Kgs
FEEDER	450 x 600 Liquid Feed Trough every 2nd divider
CONCRETE SLATS	6 rows -1800 x 400 x 70 Gretex Slats 2 rows -1700 x 400 x 70 Gretex Slats

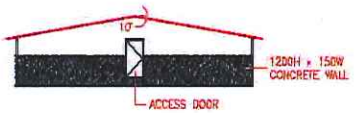
GD PORK	
LAYOUT AND ELEVATIONS	
102m x 13.1m FINISHER SHED	
NOT TO SCALE	A4
DIMENSIONS IN MILLIMETER	



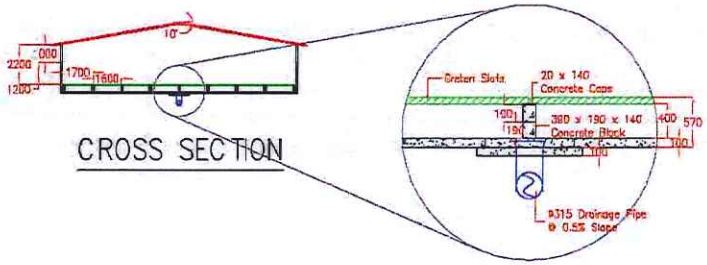
LAYOUT



SIDEWALL ELEVATION



ENDWALL ELEVATION



CROSS SECTION

STOCKING DETAILS

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No. OF PENS	72 per Shed
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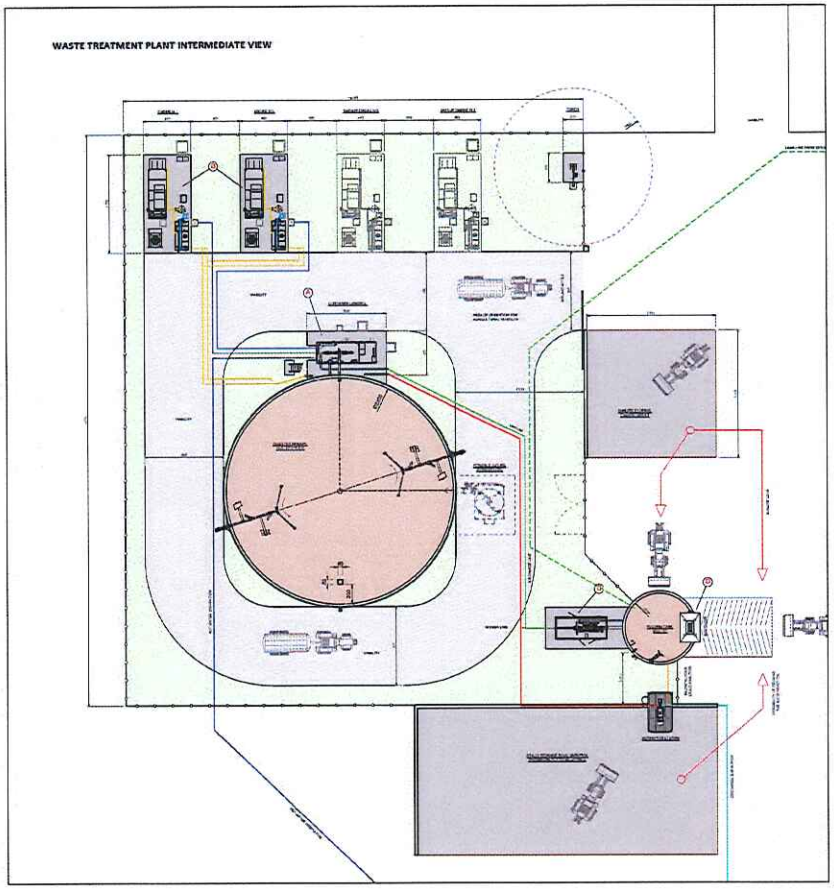
CONCRETE SLATS	6 rows -1600 x 400 x 70 Grates Slats 2 rows -1700 x 400 x 70 Grates Slats

GD PORK	
LAYOUT AND ELEVATIONS	
102m x 13.1m FINISHER SHED 1-6	
NOT TO SCALE	A4
DIMENSIONS IN MILLIMETER	

WASTE TREATMENT PLANT INTERMEDIATE VIEW



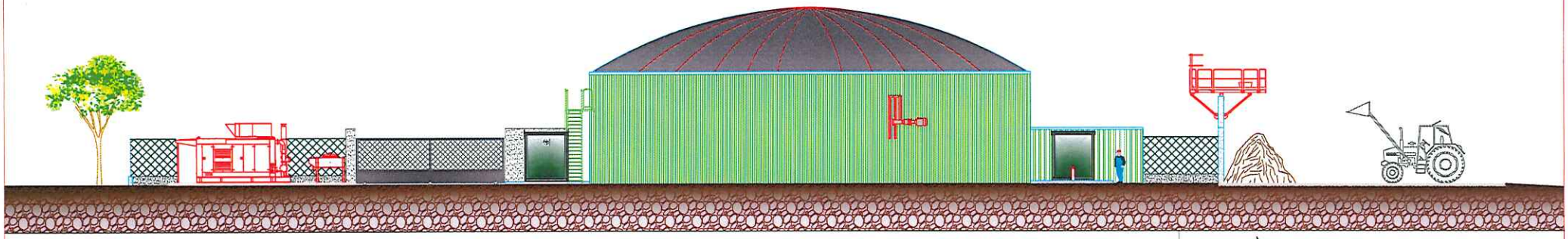
PRODUCTION OF ELECTRICITY AND HEAT
FROM BIOMAS AND ANIMAL MANURE
INSTALLED POWER: 380 kW

CUSTOMER:	GD PORK
SITE:	
1/1	GENERAL LAYOUT

PRELIMINARY DESIGN
THIS DWG IS ONLY INDICATIVE

REVISION	DESCRIPTION	DRAWN	DATE
TYED		K	8/10/2018
SCALE	ORDER	FILE	DRAWN	DATE

VIEW A



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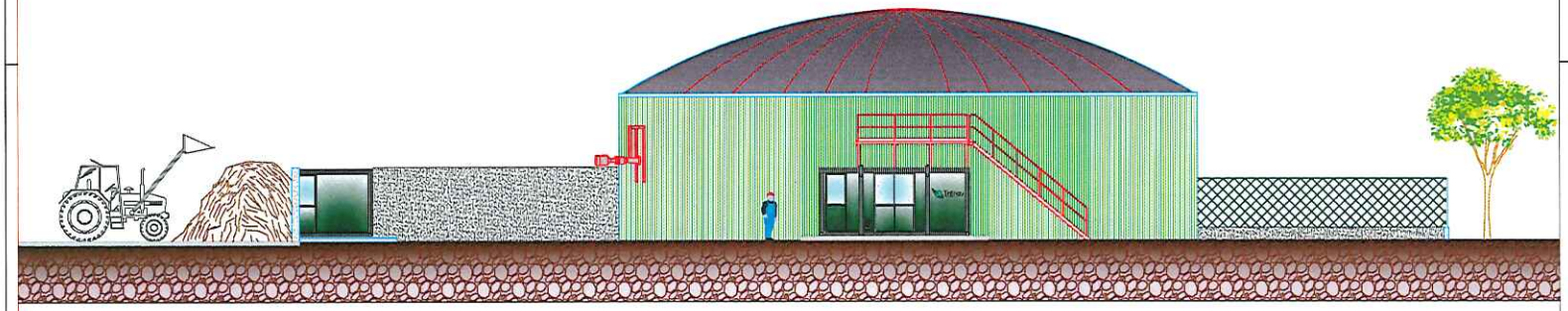

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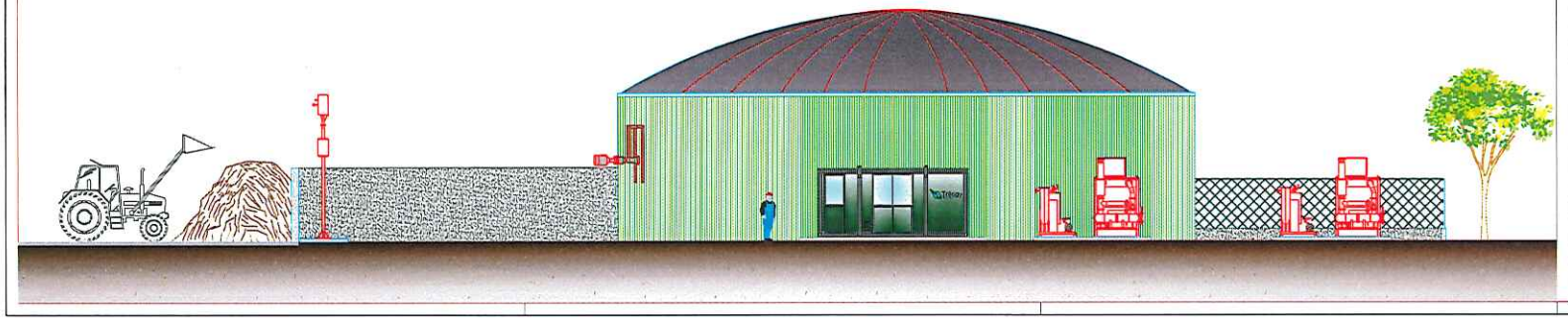
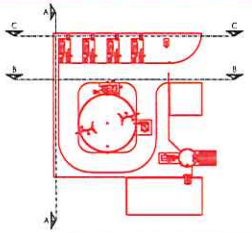


WTP PLANT



TRILOGY
RENEWABLE ENERGY
www.trilogyenergy.com.au - info@trilogyenergy.com.au
3/5 Kent Way, Malaga WA 6090
P: (618) 9248 5909

WTP PLANT

PRODUCTION OF ELECTRICITY AND HEAT
FROM ANIMAL SEWAGE & MANURE
INSTALLED POWER: 380 kW

CUSTOMER:	GD PORK
SITE:	
1/1	GENERAL VIEWS

PRELIMINARY DESIGN
THIS COPY IS ONLY INDICATIVE

TO START FOR THE DESIGN OF PROJECT EXECUTIVE AND MUST RETURN THIS DESIGN for acceptance FULL OF TECHNICAL SOLUTIONS AND THE PROVISION OF MATERIALS Supplied by us.

ANY MODIFICATION REQUEST MUST BE SHOWN IN RED ON THIS DESIGN.
THE FAILURE TO RETURN A TIGHT TURN OF MAIL AT THE COMPANY .....
WILL 'CAUSE OF SUSPENSION DESIGN ON HOLD
CONFIRMATION BY THE CLIENT

DATE _____ SIGNATURE _____

REVISION	DESCRIPTION	DRAWER	DATE
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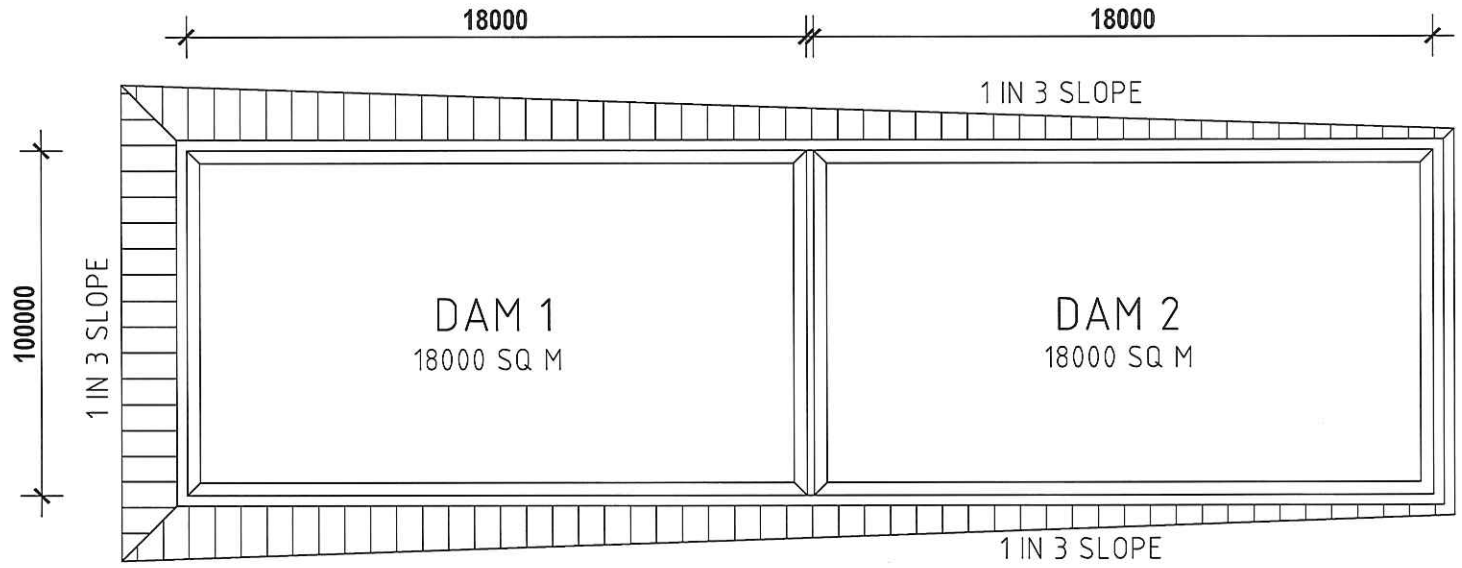
SCALE ORDER	FILE	DRAWER	DATE



PLAN - DAM LAYOUT

LONGITUDINAL SECTION

SURFACE AREA 36,000 SQ M (2 PONDS)
DEPTH 1 METRE WITH 500 FREE BOARD

30 0 30 60 90 Metre

SCALE 1 : 1500

REV.	DATE	AMENDMENT/ISSUE
A	11/06/15	ISSUED FOR INFORMATION

JEFF FREEMAN ARCHITECTS

GD PORK

APPROVED BY:

GD PORK
CRAPELLA ROAD
KOJONUP

DRAWING TITLE: POND LAYOUT PLAN

DRAWN	JF	SCHEMATIC	JF
CHECKED	SF		
APPROVED	JF		
SCALE	AS SHOWN @ A3	DATE	JANUARY 2015
JOB No.	-	FILE No.	-

DRAWING No. SK01.A

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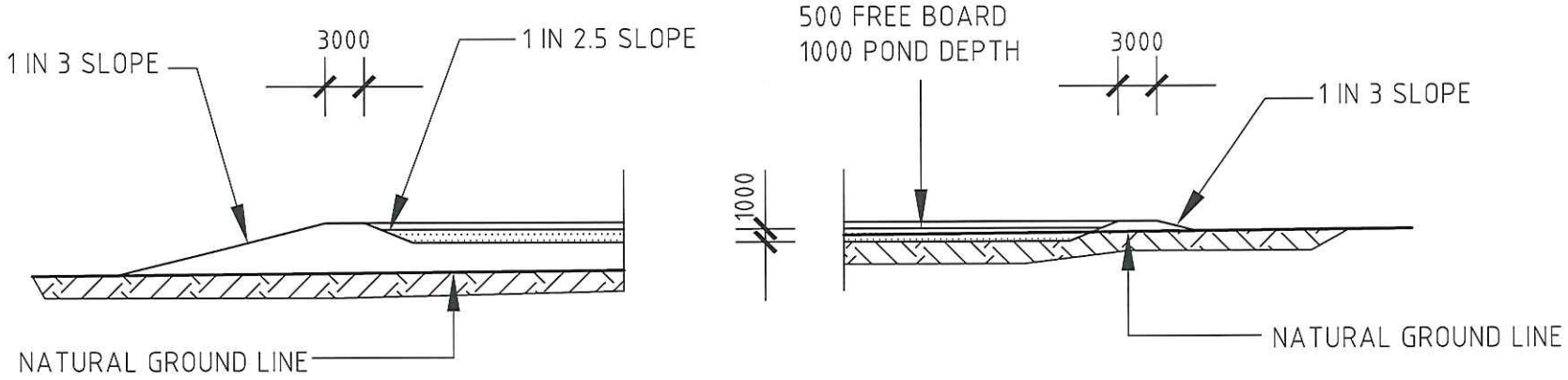

15 0 15 30 45 Metres

SCALE 1 : 750

REV.	DATE	AMENDMENT/ISSUE
A	11/05/15	ISSUED FOR INFORMATION

JEFF FREEMAN ARCHITECTS

GD PORK

APPROVED BY:_____

GD PORK
CRAPELLA ROAD
KOJONUP

DRAWING TITLE: POND LAYOUT -DETAILS

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APPROVED	JF		
SCALE	AS SHOWN @ A3	DATE	JANUARY 2015
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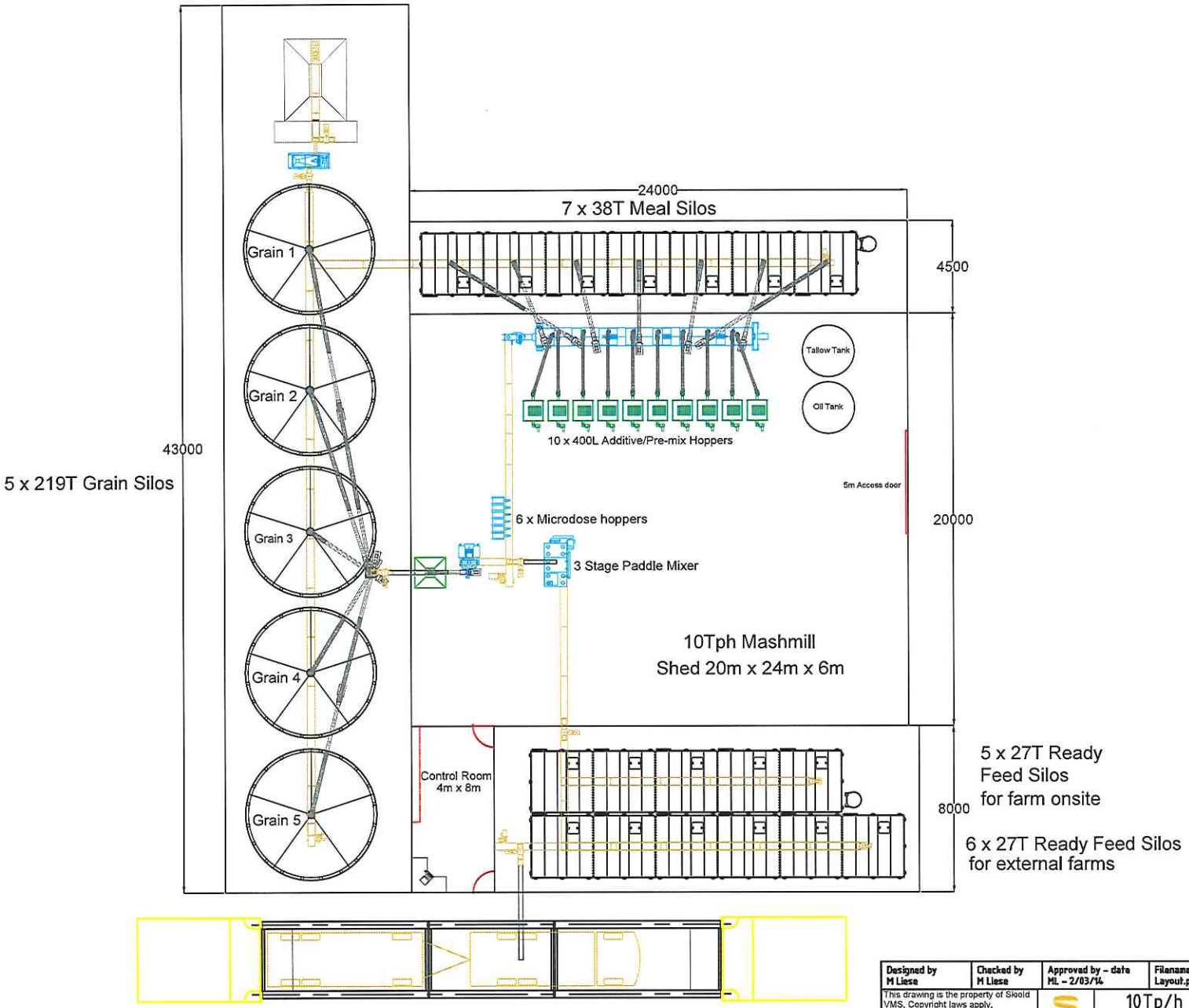

Designed by	Checked by	Approved by – date	Filename	Date	Scale
M Liese	M Liese	ML – 2/03/14	Layout.pdf	2/03/14	NTS

SKIOLD & VMS

10Tp/h Mash Mill Layout

GD Pork Feedmill | Edition 6 | Sheet 1/1

Decision Report

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

Applicant:	**GD Pork Holdings Pty Ltd (ACN 126 978 676)**
Application Number:	**W5865/2015/1 (NOS6BJ)**
Premises:	**Lot 10 Crapella Road BOSCABEL** **SHIRE OF KOJONUP** **Lot 10 on Plan 23562** **Certificate of Title Volume 2173 Folio 889**
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 the expansion of an existing extensive pig farm situated at Lot 10 Crapella Road, Boscabel, Western Australia. The premises currently operates as a deep litter piggery. The current piggery is not a prescribed premises for the purposes of the *Environment Protection Act 1986* as the pigs are housed in large open covered shelters with a concrete base and straw bedding. These piggeries are not considered intensive as described in categories 2 and 69 of Schedule 1 of the *Environment Protection Regulations 1987*.

The Applicant is seeking approval for the establishment of intensive piggery operations in combination with extensive operations for a total production of 27,360 animals (28,368 Standard Pig Units (SPU)). The expansion of the piggery proposes the use of the existing extensive sheds along with newly constructed infrastructure.

This Decision Report is based on an assessment of the Applicant's Environmental Management Plan dated April 2015 in addition to supplementary information dated 25 June 2015, 30 June 2015 and 11 August 2015 (**Final Application**).

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

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

2. Proposed Works

The Applicant proposes the following works:

- Nine tunnel/curtain ventilated finisher piggery sheds;
- An evaporation pond with two compartments (33,725 m^3; lined with clay);
- A stormwater detention basin (13,598 m^3)
- Silos, liquid feed shed facilities, feed mill; and
- Waste treatment plant consisting of a feed tank (96m^3; stainless steel), enclosed digester (2,492m^3; insulated stainless steel) and biogas reuse system.

The works are additional to the following existing infrastructure:

- 36 extensive deep litter sheds;
- Feed silos; and
- Two storm water ponds.

3. Other Approvals and Consultation

3.1 Planning Approvals

An application was lodged with the Shire of Kojonup (Shire) for planning approval for expansion on 2 May 2015. An assessment of the proposal by a Development Assessment Panel in replace of the Shire was required due to the application meeting the value threshold for a mandatory assessment. The Southern Joint Development Assessment Panel (SJDAP) considered the application on 10 August 2015 and approved the application on 10 August 2015. The proposal was referred to Council's ordinary meeting on 15 September 2015 for consideration of the proposal against the Shire's Health Local Laws. Council approved the proposal on 15 September 2015.

3.2 Consultation

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	
Shire of Kojonup (Shire) 14 August 2015 • The planning application was referred to a Development Assessment Panel to complete the determination for the Shire. • The Shire has a Health Local Law that requires piggeries to be approved. • The proposal is scheduled to be referred to Council's Ordinary meeting on 15 September 2015. • The application was referred by the Shire to the Department of Health for comment.	• Odour and dust impacts on neighbouring properties

4. Location and Siting

4.1 People

The draft *Guidance Statement: Separation distances* provides:

Category	Description	Emission and minimum distance (m)
2	Intensive piggery (1000 animals or more): Premises on which pigs are fed, watered and housed in pens	Noise 1000 m Odour S-Factor Refer to "Level 1 only of the National Environmental Guidelines for Piggeries" (Australian Pork Limited, 2010)
23	Animal feed manufacturing (1,000 tonnes or more per year): Premises (other than premises within category 15 or 16) on which animal food is manufactured or processed	Noise, dust, odour 500 m

4.1.1 Noise

Sensitive Receptor	Distance from Prescribed Premises
Closest residential dwellings	Approximately 2,300 m to the NE and SW

4.1.2 Odour

Factors	Rural Dwelling	Rural Residential	Town
Level 1 'S' Factor recommended minimum distance (m)	1,505 m	1,962 m	3,269 m
Actual Distance (m)	2,300 m	16,000 m	17,000 m
Applicant calculated minimum distance (based on Level 1 'S' Factor) (m)	1,500 m	2,000 m	3,300 m

4.2 Sensitive ecosystems

Sensitive ecosystems	Distance from Prescribed Premises
Wetland (Salt Lakes)	Salt lake within premises boundary 300 m from evaporation pond 100 m from stormwater ponds and 250 m from waste treatment plant. Salt Lake (Fitze's swamp) located directly north (160m) of the premises boundary and a number of lakes/swamps located north and southeast.
Watercourse – minor non-perennial	Located within premises boundary connecting to the swamp 160 m north of the premises boundary, approximately 40 m from new accommodation sheds. Located east of the premises boundary, connecting to an area subject to inundation that connects to Fitze's swamp.
Blackwood Floodplain	2,700 m
Beaufort River	4,000 m

4.3 Groundwater and water sources

Groundwater and water sources	Distance from Prescribed Premises
Groundwater as a resource (beneficial use)	Moderate-major groundwater resource located approximately 80 m north of the premises boundary. The groundwater resource is described as a sedimentary aquifer containing sedimentary rocks with intergranular porosity in palaeochannels.
Bore users* (beneficial use)	Four bores located within 1 km radius of the site boundary identified using WIN groundwater layer. Two bores identified as a Department of Water "project bore: operation" and "project bore: production", other two identified as "no current owner" or "not operational" Department of Agriculture desk top assessment has indicated that there is a potable supply bore on the northern boundary of the premises. Salinity from the bore is approximately 2300 mg/L-3000 mg/L
Beaufort River	4,000 m

*Bore locations identified through WIN Groundwater Sites GIS data.

4.4 Other site characteristics

Other characteristic	Distance from Prescribed Premises
Area subject to inundation	Located within premises boundary, in the proposed location of the new stormwater basin

5. Inherent 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 6.

	Emission source	Emission (type and quantity)	Pathway	Receptor	Proponent Controls	Consequence	Likelihood	Risk Rating
1.	Noise generated through housing of pigs in extensive and intensive shelters	Noise	Emission to air Transmission through air	Rural dwelling 2,300 m	Separation distance Stress of animals will be minimal as a result of readily available feeding	Insignificant	Unlikely	Low risk of nuisance and disturbance for residents
2.	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	Rural dwelling 2,300 m	Separation distance Cover and ventilation of sheds Cleaning regime	Insignificant	Unlikely	Low risk of odour affecting public amenity
3.	Nutrient rich slurry and waters from sheds	Slurry and wastewater (31,505 tpa), and deep litter (2,924 tpa) containing elevated levels of nutrients	Emission to land or waters Leakage and seepage direct into ground or into surrounding watercourses	Minor non-perennial watercourse 40 m from the intensive sheds. Onsite geomorphic wetland approximately 300 m from the sheds In situ soils	Separation distance Plug and pull effluent collection system and covered concrete collection sump Concrete floor sheds Spent deep litter removed to WTP	Moderate	Unlikely	Moderate risk of eutrophication of receiving surface water bodies

	Emission source	Emission (type and quantity)	Pathway	Receptor	Proponent Controls	Consequence	Likelihood	Risk Rating
4.	Stormwater and leachate from storage of waste materials (spent litter, carcasses, slurry and pressed digestate manure)	Nutrient-rich stormwater and leachate (nutrient concentrations of manure, slurry and carcasses contained in Appendix 2 of the EMP)	Emission to land or waters Contaminated stormwater and leachate running directly from the waste material	Minor non-perennial watercourse approximately 150 m from the storage areas Onsite geomorphic wetland 250 m from the waste storage areas at the WTP In situ soils	Separation distance Covered concrete slurry collection sump Bunded concrete spent litter storage area with a capacity of 300m^3 Waste treatment plant consisting of impervious: • 96 m^3 feeding tank; and • Enclosed 2,492 m^3 digester Bunded concrete pressed manure storage area with separation station return to WTP feeding tank Collection and diversion of clean stormwater to stormwater dam	Moderate	Unlikely	Moderate risk of eutrophication of receiving surface water bodies
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 Odorous emissions move with direction of wind	Rural dwelling 2,300 m	Contemporary engine designed for biogas fuel Quality of biogas monitored and metered Regular inspection and maintenance of engines	Insignificant	Unlikely	Low risk of impact to amenity of residents

	Emission source	Emission (type and quantity)	Pathway	Receptor	Proponent Controls	Consequence	Likelihood	Risk Rating
6.	Storage of treated wastewater in evaporation pond	Nutrient-rich treated wastewater potentially containing pathogens (38 tpa nitrogen, 11 tpa phosphorous). Total water input is 70 tpd	Emission to water Seepage of treated wastewater into groundwater from leaks or seepage through the pond base Direction of groundwater flow is unknown	Granitic basement overlain by a thick (up to 30m) weathered profile comprising mainly of materials with a clayey to sandy-clay texture Supporting Environmental Management Plan determines depth to permanent groundwater indicated as between 5-10 m below ground level (mBGL). Depth to shallow perched groundwater indicated to be approximately 2 m BGL Four bores located within 1 km radius of the site including a potable water bore identified by Department of Food and Agriculture desktop assessment within 680m of the pond	Siting - the separation distance from the base of the wastewater pond to the highest groundwater level is expected to be greater than 2 m Evaporation pond is lined with 300mm of clay engineered to a permeability of less than $1x10^{-9}$ m/s Ambient groundwater monitoring The pond has two compartments to allow inspection of the lining if required	Moderate	Unlikely	Moderate risk of seeping to groundwater

	Emission source	Emission (type and quantity)	Pathway	Receptor	Proponent Controls	Consequence	Likelihood	Risk Rating
7.	Overtopping of treated wastewater entering land and waters	Nutrient-rich treated wastewater potentially containing pathogens (38 tpa nitrogen, 11 tpa phosphorous). Total water input is 70 tpd	Emission to land Overtopping or breach of treated liquid waste from evaporation pond Direct runoff of treated wastewater or infiltration into ground	Onsite geomorphic wetland 300 m from the pond In situ soils	Separation distance - establishing minimum separation distance of 50 m between wetlands and wastewater pond. Pond sized based on water balance calculation and number of pigs to ensure sufficient capacity 500 mm freeboard The pond has two compartments to allow desludging to occur Separation of clean stormwater to stormwater dams	Moderate	Possible	Moderate risk of causing eutrophication of receiving surface water bodies

6. 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)				
			61 Siting controls	6.2 Ambient monitoring	6.3.1 Shed and waste handling infrastructure	6.3.2 Waste treatment plant infrastructure	6.3.3 Evaporation pond infrastructure
Risk Items (see section 5)	1	Noise from generated through housing of pigs impacting public amenity	Low risk. No control required.				
	2	Odour generated through housing of pigs impacting public amenity	Low risk. No control required.				
	3	Leakage of nutrient rich slurry and waters from sheds entering land and waters causing eutrophication of receiving surface water bodies	●	●	●		
	4	Stormwater and leachate from storage of waste materials entering land and waters causing eutrophication of receiving surface water bodies	●	●	●	●	●
	5	Biogas impacting public amenity	Low risk. No control required.				
	6	Storage of treated wastewater in evaporation pond seeping to groundwater.	●	●			●
	7	Overtopping of treated wastewater	●	●			●

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.

6.1 Siting controls

6.1.1 Groundwater

(a) The evaporation pond must have a minimum 2m separation to groundwater.

(b) Exact distances to groundwater must be certified prior to commencement of construction.

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.

6.1.2 Wetlands

The evaporation pond and piggery infrastructure (with the exception of stormwater dams) 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.

6.2 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; and

  (ii) two down-gradient of the infrastructure;

(e) New groundwater monitoring bores must be surveyed to allow the ground level (to Australian Height Datum) at each location be accurately determined.

6.3 Infrastructure specifications

6.3.1 Sheds and Waste Handling System

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

(a) Finisher sheds must comprise slatted concrete floors and contain continuous feeding system to all animals within the shed.

(b) Employ pull and plug systems for all finisher sheds, as described in the Environment Management Plan, comprising of impermeable, corrosion resistant and sturdy underfloor pits and covered concrete collection sump.

(c) Ensure all wastewater and slurry from the intensive piggery sheds is directed to the wastewater treatment plant by 300mm diameter impermeable PVC piping.

(d) Ensure all waste storage and treatment areas are constructed from impermeable concrete hardstand.

6.3.2 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.

6.3.3 Evaporation Pond

(a) The evaporation pond to be constructed in accordance with the documentation provided through the application and supporting documentation and to meet the following specifications:

(i) minimum internal capacity of 33,725 m^3;

(ii) minimum surface area of 36,000 m^2;

(iii) minimum length at crest of 360 m;

(iv) minimum width at crest of 100 m;

(v) internal batter not exceeding 1:2.5 (horizontal:vertical); and

(vi) maximum water depth of 1m (not including freeboard).

(b) Soils used for the lining of the evaporation pond must be free from plant roots and reactive, soluble and organic matter.

(c) The liner material used for the evaporation pond must meet the following criteria:

(i) percentage fines with acceptability of:

(a) more than 25 per cent passing a 75 micron sieve; and

(b) more than 15 per cent passing a 2 micron sieve,

tested using AS 1289 3.6.1-2009

(ii) liquid limit with acceptability of 30 to 70 per cent tested using AS 1289 3.1.2-2009.

(iii) plasticity index with acceptability of more than 15, tested using method AS 1289 3.3.1-2009.

(iv) Emerson class number with acceptability of 5 to 6 tested using AS 1289 3.8.1-2006.

(d) 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.

(e) 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).

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

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

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

(i) 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).

7 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.

8 Conditions for the licence

Any furture licence may include conditions regarding management of stormwater, waste storage, the waste treatment plant, and the evaporation pond (including maintaining a freeboard of 500 mm). Conditions for maintenance of containment infrastructure, seepage assessment, groundwater monitoring, specified animal numbers and reporting requirements may be included on the licence.

The works include a feedmill which will have the capacity to produce 10 tonne of feed per hour. The feedmill is within Category 23 “Animal feed manufacturing” of Schedule 1 to the *Environmental Protection Regulations 1987*. The main environmental risk of the feedmill is noise and dust, which may be subject to conditions on the licence.

9 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 decision report to mitigate the identified environmental risks.

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