Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6006/2016/1
Works approval holder	Westpork Pty Ltd
ACN	009 148 789
Registered business address	1/7 Foundry Road MAYLANDS WA 6051
DWER file number	DER2016/002175
Duration	12/12/2017 to 11/12/2026
Date of amendment	17/01/2023
Premises details	Westpork Moora Piggery Complex 898 Agaton Road DANDARAGAN WA 6507 Lot 3616 on Plan 206451 As shown in the premises map in Schedule 1

Prescribed premises category description (Schedule 1, Environmental Protection Regulations 1987)	**Assessed design capacity**
Category 2: Intensive piggery: premises on which pigs are fed, watered and housed in pens.	Not more than 34,000 animals (35,675 Standard Pig Units (SPUs) (Moora 3) Not more than 68,000 animals (71,350 SPUs (Moora 2 & Moora 3 combined)

This amendment is granted to the works approval holder, subject to the attached conditions, on 17/01/2023, by:

Caron Goodbourn
Digitally signed by Caron Goodbourn
Date: 2023.01.17 14:56:47 +08'00'

Caron Goodbourn
MANAGER, PROCESS INDUSTRIES
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Ref number	Summary of changes
12/12/2017	W6006/2016/1	Works approval granted
17/01/2023	W6006/2016/1	Amendment to include time limited operations for the Moora 2 and Moora 3 piggery modules, and extend the duration by a further 3 years (this amendment)

Interpretation

In this works approval:

(a) the words 'including', 'includes' and 'include' in conditions mean 'including but not limited to', and similar, as appropriate;
(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;
(d) any reference to an Australian or other standard, guideline or code of practice in this works approval:
  (i) if dated, refers to that particular version; and
  (ii) if not dated, refers to the latest version and therefore may be subject to change over time;
(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and
(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The works approval holder must construct the infrastructure listed in Table 1:

(a) in accordance with the corresponding design and construction requirements; and
(b) at the corresponding infrastructure location;

as set out in that table.

Table 1: Infrastructure design and construction / installation requirements

	Infrastructure	Design and construction requirements	Infrastructure location
	Moora 2 infrastructure		
1	24 x conventional piggery sheds	(a) Farrowing and nursery sheds (4) must be mechanically ventilated and fully enclosed; (b) Gilt, breeding, dry sow and finisher sheds (20) must be constructed with a building ventilation system that is capable of both mechanical and natural ventilation; (c) The building ventilation system must be constructed to allow the opening of curtains on the side of sheds during autumn and spring and the closure of curtains during summer and winter with the use of mechanical	'Moora 2' as depicted in Schedule 1 map

	Infrastructure	Design and construction requirements	Infrastructure location
		ventilation; (d) All sheds must have concrete pits underneath to enable effluent to be disposed via a pull-plug effluent management system; (e) All sheds must comprise of concrete and partially slatted floors; (f) The flooring and drainage system of all sheds must prevent the discharge of effluent to the environment; (g) All underfloor pits must direct effluent to the CAP via the storage tank through the effluent drainage lines; (h) Dry sow shed feeders must be electronic;	
2	Effluent transfer pipelines	(a) Effluent pipelines for the sheds and wastewater treatment system must be impermeable unplasticised polyvinyl chloride (uPVC); (b) The pipelines must connect each modular shed system to the wastewater treatment system; (c) Pipelines must include “Y” pieces at regular intervals; (d) Pipelines must be constructed with a minimum slope of 1 – 2% to allow gravity to flow;	Not specified
3	Effluent storage tank (1)	(a) Must be constructed of concrete; (b) Must have a minimum storage capacity of 75 kL	‘Storage tank’ as depicted in Schedule 1 map
4	Hardstand (1)	(a) The dimensions of the hardstand must be 60 m x 70 m and clay-lined to achieve a permeability of at least 1 x 10^{-9} m/s; (b) Bunded sides of the hardstand must be compacted clay to prevent the ingress of stormwater and contain all leachate and incident stormwater; (c) Hardstand must include a sump to collect rainfall and leachate, or divert to CAP;	‘Bunded hardstand’ as depicted in Schedule 1 map
5	All ponds and settlement trenches	The ponds must be designed and constructed to be fit for purpose for receiving all effluent from the maximum number of pigs on the site and of suitable capacity allowing for: (a) A minimum top of embankment freeboard of 400 mm at all times on the anaerobic and facultative ponds and the settlement trenches; (b) A minimum top of embankment freeboard of 500 mm for the evaporation ponds; (c) All ponds must have a minimum of 2 m separation between the base of the pond and the highest level of groundwater; (d) Overtopping to not occur on average more than once every 10 years;	‘Wastewater treatment system’ as depicted in Schedule 1 map
6	Covered anaerobic pond (CAP) (1)	(a) Must be constructed with a concrete floor with four mixer support blocks for stirrers; (b) The dimensions of the CAP must be 85 m x 85 m from the top of the crest and 8 m deep; (c) Capacity of the CAP must be minimum of 32.8 kL, including freeboard; (d) Sides of the CAP must be lined with minimum 1.5 mm thick HDPE; (e) Cover of the CAP must comprise minimum 2.0 mm thick HDPE;	‘Wastewater treatment system’ as depicted in Schedule 1 map

	Infrastructure	Design and construction requirements	Infrastructure location
		(f) Base, sides and cover of the CAP must be gas tight; (g) Underground trenches must be included to allow the installation of pipes and cables for the transport of influent and effluent in and out of the CAP; (h) Safety vents and gas pressure monitors must be installed on the CAP;	
7	Flare (1)	(a) Height of flare must not exceed a vertical height of 3 m from the ground level; (b) Flare must include an auto ignition system; (c) Flare must be located in a topographic low point to minimise line-of-sight from the premises boundary;	'Flare pad' as depicted in Schedule 1 map
8	Settlement trenches (2)	(a) Must be 90 m long, 15 m wide and 2.5 m deep; (b) Capacity of the trenches must be at least 2,137 m^3 (including a 400 mm freeboard); (c) Design of the trenches must allow at least one trench to be online at any given time while the other trench is offline for desludging; (d) Trenches must be constructed with a lining system that complies with the requirements specified in condition 2;	'Wastewater treatment system' as depicted in Schedule 1 map
9	Facultative pond (1)	(a) Must be 380 m long, 140 m wide and 2.5 m deep; (b) Capacity of the pond must be at least 143,550 m^3 (including 400 mm freeboard); (c) Pond must be constructed with a single HDPE geomembrane liner with a manufacturer specified thickness of at least 1.5 mm (or equivalent); (d) HDPE geomembrane liner must comply with, and be installed in accordance with, the requirements specified in condition 4;	'Wastewater treatment system' as depicted in Schedule 1 map
10	Evaporation pond (1)	(a) Must be 380 m long, 140 m wide and 1.5 m deep; (b) Capacity of the pond must be at least 101,267 m^3 (including 500 mm freeboard); (c) Pond must be constructed with a single HDPE geomembrane liner with a manufacturer specified thickness of at least 1.5 mm (or equivalent); (d) HDPE geomembrane liner must comply with, and be installed in accordance with, the requirements specified in condition 4;	'Wastewater treatment system' as depicted in Schedule 1 map
11	Groundwater monitoring bores (4)	(a) Must install at least two groundwater monitoring bores up-hydraulic gradient of the WTS; (b) Must install at least two groundwater monitoring bores down-hydraulic gradient of the WTS; (c) All groundwater monitoring bores must be installed in accordance with the requirements specified in condition 5;	'MW9', 'MW10', 'MW11' and 'MW12' as depicted in Schedule 1 map
	Moora 3 infrastructure		
1	24 x conventional piggery sheds	(a) Farrowing and nursery sheds (4) must be mechanically ventilated and fully enclosed; (b) Gilt, breeding, dry sow and finisher sheds (20) must be ventilated with a combi-system; (c) The combi-system must be constructed to allow the opening of curtains on the side of sheds during autumn and spring and the closure of curtains during summer	'Moora 3' as depicted in Schedule 1 map

	Infrastructure	Design and construction requirements	Infrastructure location
		and winter with the use of mechanical ventilation; (d) All sheds must have concrete pits underneath to enable effluent to be disposed via a pull-plug effluent management system; (e) All sheds must comprise of concrete and partially slatted floors; (f) The flooring and drainage system of all sheds must prevent the discharge of effluent to the environment; (g) All underfloor pits must direct effluent to the CAP via the storage tank through the effluent drainage lines;	
2	Effluent transfer pipelines	(a) Effluent pipelines for the sheds and wastewater treatment system must be impermeable uPVC; (b) The pipelines must connect each modular shed system to the wastewater treatment system; (c) Pipelines must include "Y" pieces at regular intervals; (d) Pipelines must be constructed with a minimum slope of 1 – 2% to allow gravity to flow;	Not specified
3	Effluent storage tank (1)	(a) Must be constructed of concrete; (b) Must have a minimum storage capacity of 75 kL;	'Storage tank' as depicted in Schedule 1 map
4	Hardstand (1)	(a) The dimensions of the hardstand must be 60 m x 70 m and clay-lined to achieve a permeability of at least 1 x 10^{-9} m/s; (b) Bunded sides of the hardstand must be compacted clay to prevent the ingress of stormwater and contain all leachate and incident stormwater; (c) Hardstand must include a sump to collect rainfall and leachate, or divert to CAP;	'Bunded hardstand' as depicted in Schedule 1 map
5	All ponds and settlement trenches	The ponds must be designed and constructed to be fit for purpose for receiving all effluent from the maximum number of pigs on the site and of suitable capacity allowing for: (a) A minimum top of embankment freeboard of 400 mm at all times on the anaerobic and facultative ponds and the settlement trenches; (b) A minimum top of embankment freeboard of 500 mm for the evaporation ponds; (c) All ponds must have a minimum of 2 m separation between the base of the pond and the highest level of groundwater; (d) Overtopping to not occur on average more than once every 10 years;	'Wastewater treatment system' as depicted in Schedule 1 map
6	Covered anaerobic pond (CAP) (1)	(a) Must be constructed with a concrete floor with four mixer support blocks for stirrers; (b) The dimensions of the CAP must be 85 m x 85 m from the top of the crest and 8 m deep; (c) Capacity of the CAP must be minimum of 32.8 kL, including freeboard; (d) Sides of the CAP must be lined with minimum 1.5 mm thick HDPE; (e) Cover of the CAP must comprise minimum 2.0 mm thick HDPE; (f) Base, sides and cover of the CAP must be gas tight; (g) Underground trenches must be included to allow the	'Wastewater treatment system' as depicted in Schedule 1 map

	Infrastructure	Design and construction requirements	Infrastructure location
		installation of pipes and cables for the transport of influent and effluent in and out of the CAP; (h) Safety vents and gas pressure monitors must be installed on the CAP;	
7	Flare (1)	(a) Height of flare must be at least 3 m above the as-built ground level; (b) Flare must include an auto ignition system; (c) Flare must be located in a topographic low point to minimise line-of-sight from the premises boundary;	'Flare pad' as depicted in Schedule 1 map
8	Settlement trenches (2)	(a) Must be 90 m long, 15 m wide and 2.5 m deep; (b) Capacity of the trenches must be at least 2,137 m^3 (including a 400 mm freeboard); (c) Design of the trenches must allow at least one trench to be online at any given time while the other trench is offline for desludging; (d) Trenches must be constructed with a lining system that complies with the requirements specified in condition 2;	'Wastewater treatment system' as depicted in Schedule 1 map
9	Facultative pond (1)	(a) Must be 380 m long, 140 m wide and 2.5 m deep; (b) Capacity of the pond must be at least 143,550 m^3 (including 400 mm freeboard); (c) Pond must be constructed with a single HDPE geomembrane liner with a manufacturer specified thickness of at least 1.5 mm (or equivalent); (d) HDPE geomembrane liner must comply with, and be installed in accordance with, the requirements specified in condition 4;	'Wastewater treatment system' as depicted in Schedule 1 map
10	Evaporation pond (1)	(a) Must be 380 m long, 140 m wide and 1.5 m deep; (b) Capacity of the pond must be at least 101,267 m^3 (including 500 mm freeboard); (c) Pond must be constructed with a single HDPE geomembrane liner with a manufacturer specified thickness of at least 1.5 mm (or equivalent); (d) HDPE geomembrane liner must comply with, and be installed in accordance with, the requirements specified in condition 4;	'Wastewater treatment system' as depicted in Schedule 1 map
11	Groundwater monitoring bores (4)	(a) Must install at least two groundwater monitoring bores up-hydraulic gradient of the WTS; (b) Must install at least two groundwater monitoring bores down-hydraulic gradient of the WTS; (c) All groundwater monitoring bores must be installed in accordance with the requirements specified in condition 5.	'MW5', 'MW6', 'MW7' and MW8' as depicted in Schedule 1 map

2. The works approval holder must ensure the hardstand and settlement trenches for each piggery module are constructed with a lining system that comprises at least 300 mm of clay or other suitable compactable soil constructed in two 150 mm layers following compaction with an in-situ coefficient of permeability of 1 x 10^{-9} m/s or less.

3. The works approval holder must ensure that:

(a) clay materials used to comply with the requirements of condition 2 are well graded and tested for conformance against the particle size distribution, plasticity index and other characteristics listed in Schedule 2; and

(b) permeability and compaction requirements for clay and gravel materials used to

comply with condition 2 are demonstrated by geotechnical testing conducted by a qualified professional engineer and in accordance with AS 1289.

4. The works approval holder must ensure all HDPE geomembrane liners comply with the properties listed in Table 2, and are constructed in accordance with the requirements specified in that table.

Table 2: HDPE geomembrane liner installation requirements

	Item	Property/construction requirement
1	Liner properties	HDPE liners must have the following properties: (a) Formulated density of 0.94 g/cc or more; (b) Melt index value per ASTM D1238 of less than 1.0 g in 10 minutes; (c) Carbon black content of 2-3%; (d) Minimum tensile strength at yield of 22,000 kN/m or 16,000 kN/m^2; (e) Minimum tensile strength at break of 40 kN/m or 550 kn/m^2; (f) Minimum elongation at yield of 12%, and at break 700%
2	Liner fabrication	(a) Liners must be fabricated to form the shape of the pond embankments; (b) All seams and joins made on the premises must be continuous; (c) Panels of the liner must be overlapped by a minimum of 100 mm, prior to heat welding or mechanical joining
3	Welding materials	Membrane welding materials must be supplied by the liner manufacturer, and be of the same material as the liner membrane
4	Seams and joins	All seams and joins must be constructed and tested as watertight over their full length using a vacuum box test and air pressure test
5	Shear resistance	Shear resistance must be tested in accordance with ASTM D5321

5. The works approval holder must design, construct and install groundwater monitoring bores in accordance with the requirements in Table 3.

Table 3: Infrastructure requirements – groundwater monitoring bores

	Design and construction / installation requirements	Monitoring bore location(s)	Timeframe
1	(a) Designed and constructed in accordance with ASTM D5092/DM5092M016: Standard practice for design and installation of groundwater monitoring bores. (b) Bores must be constructed with a screened interval within the shallow water table. (c) Soil samples must be collected and logged during the installation of the monitoring bores. (d) A record of the geology encountered during drilling must be described and classified in accordance with the Australian Standard Geotechnical Site Investigations AS 1726. (e) Bores construction details must be documented within a bore construction log to demonstrate compliance with ASTM D5092/D5092M-16. The construction logs shall include elevations of the top of casing position to be used as the reference point for water-level measurements and the elevations of the ground surface protective installations.	Sited in accordance with *Water Quality Protection Note 30 Groundwater Monitoring Bores* (DoW, 2006) – Recommendations – Siting of monitoring bores; and sited and spaced to enable detection of any potential seepage from the WTS	Must be constructed, developed (purged), determined to be operational prior to the commencement of time limited operations for each piggery module

	(f) All installed monitoring bores must be developed after drilling to remove fine sand, silt, clay and any drilling mud residues from around the bore screen to ensure the hydraulic functioning of the bore. A detailed record should be kept of bore development activities and included in the bore construction log. (g) The vertical (top of casing) and horizontal position of each monitoring bore must be surveyed and subsequently mapped by a suitably qualified surveyor. (h) A bore location map (using aerial image overlay) must be prepared and include the location of all monitoring bores in the monitoring network and their respective identification numbers.		

Compliance reporting

6. The works approval holder must, within 30 calendar days of the infrastructure being constructed for each of the Moora 2 and Moora 3 modules, respectively, required by condition 1:

(a) undertake an audit of their compliance with the requirements of condition 1 for the items of infrastructure in each module; and
(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance for each module.

7. The Environmental Compliance Report required by condition 6, must include as a minimum the following:

(a) certification by a qualified professional engineer, whether the items of infrastructure or components thereof, as specified in condition 1, have been constructed in accordance with the corresponding requirements specified in condition 1;
(b) as constructed plans for each item of infrastructure or component of infrastructure as specified in condition 1;
(c) results of clay materials and geotechnical testing required by conditions 2 & 3;
(d) certification of all installed HDPE geomembrane liners against the properties and construction requirements specified in condition 4;
(e) a groundwater monitoring bore construction report evidencing compliance with the requirements of condition 5; and
(f) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.

8. Subject to condition 7(a), where an item of infrastructure or component of infrastructure has been certified as not being constructed, or does not comply with the corresponding requirements, or contains material defects, the works approval holder must:

(a) correct the non-compliant or defective works, prior to re-certifying in accordance with condition 7(a); or
(b) provide to the CEO a description of, and explanation for, any departures from the requirements specified in condition 1 that do not require rectification and do not constitute a material defect along with the Environmental Compliance Report required by condition 6.

Construction waste disposal

9. The works approval holder may only bury waste on the premises if:

(a) it is generated from activities related to the construction of infrastructure specified in Table 1;
(b) it does not include hazardous materials, such as batteries, chemicals, pesticides, herbicides, insecticides and pharmaceuticals;
(c) it is of a type specified in Table 4; and
(d) it meets any specification or quantity limit specified in Table 4.

Table 4: Waste types for burial

	Waste type	Specification	Quantity limit
1	Clean fill	Material that will have no harmful effects on the environment and which consists of rocks or soil arising from the excavation of undisturbed material	Less than 20 tonnes per year
2	Construction and demolition waste	Materials in the waste stream which arise from construction, refurbishment or demolition activities	

Time limited operations phase

Commencement and duration – Moora 3

10. The works approval holder may only commence time limited operations of the Moora 3 module where:

(a) the following infrastructure for that piggery module has been constructed and/or installed:
  (i) the initial four (4) piggery sheds;
  (ii) the effluent pipelines;
  (iii) the anaerobic pond (excluding cover and gas collection system);
  (iv) at least one settlement trench;
  (v) the facultative pond;
  (vi) the mortalities burial pit; and
  (vii) the four (4) groundwater monitoring bores;
(b) the Environmental Compliance Report as required by condition 6 has been submitted by the works approval holder for all the infrastructure listed in condition 10(a) for that piggery module.

11. The works approval holder may conduct time limited operations for the Moora 3 piggery module:

(a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 10 for that piggery module; or
(b) until such time as a licence for that piggery module is granted in accordance with Part V of the *Environmental Protection Act 1986*,

whichever is sooner.

Stocking requirements – Moora 3

12. The works approval holder may only commence operation of Moora 3 piggery sheds additional to the initial four sheds specified in condition 10(a)(i) where:

(a) the cover and gas collection system have been installed on the anaerobic pond;
(b) the flare has been installed and is operational;
(c) the evaporation pond has been constructed; and
(d) the Environmental Compliance Report as required by condition 6 has been submitted by the works approval holder for the additional piggery sheds, the CAP and gas

collection system, flare and evaporation pond,

for that piggery module.

Specified actions – Moora 3

13. The works approval holder must ensure that by **1 March 2023**:

(a) the cover on the Moora 3 anaerobic pond has been installed and certified by a qualified professional engineer as being gastight; and
(b) the Moora 3 biogas collection system and flare has been commissioned and certified by a qualified professional engineer as operating efficiently.

14. The works approval holder must, by **20 March 2023**, prepare and submit to the CEO, copies of the certifications required by condition 13.

Commencement and duration – Moora 2

15. The works approval holder must not commence time limited operations for the Moora 2 module until:

(a) the following infrastructure for that piggery module has been constructed and/or installed:
    (i) the anaerobic pond, including the cover and gas collection system;
    (ii) the flare has been installed and is capable of operating;
    (iii) at least one settlement trench;
    (iv) the facultative pond;
    (v) the mortalities burial pit; and
    (vi) the four (4) groundwater monitoring bores;
(b) the Environmental Compliance Report as required by condition 6 has been submitted by the works approval holder for all the infrastructure listed in condition 15(a) for that piggery module; and
(c) satisfactory performance of the Moora 3 covered anaerobic pond (CAP) has been demonstrated, including:
    (i) the CAP has been certified as being gastight; and
    (ii) the flare has operated efficiently for at least 6 months, with no episodes of elevated levels of odour due to release of unburnt biogas.

16. The works approval holder may conduct time limited operations for the Moora 2 piggery module until such time as a licence amendment for that piggery module is granted in accordance with Part V of the *Environmental Protection Act 1986*.

Infrastructure and equipment

17. During time limited operations, the works approval holder must ensure the premises infrastructure listed in Table 5 and located at the corresponding infrastructure location is maintained and operated in accordance with the corresponding operational requirements set out in that table.

Table 5: Infrastructure requirements during time limited operations

	Site infrastructure	Operational requirement
1	Conventional indoor pig sheds	(a) Subject to conditions 11 & 16, stocking density for each piggery module must not exceed 34,806 SPUs at any one time; (b) Sheds must be cleaned daily to ensure clean lanes, pens and handling areas; (c) Effluent stored in underfloor pits must be released at least once per week via the pull-plug system; (d) Effluent from underfloor pits must only be released to the anaerobic pond/CAP, via an effluent storage tank;

	Site infrastructure	Operational requirement
		(e) Following the release of effluent from the underfloor pits, clean water must be used to partially refill the pits to dislodge manure stuck to the floor; (f) Farrowing and nursery sheds must remain fully enclosed at all times and be operated with mechanical ventilation; (g) Gilt, breeding, dry sow and finisher sheds may be operated with mechanical or natural ventilation to ensure ambient temperature is maintained between 15 and 30°C; (h) Deceased animals, afterbirth and foreign materials must be removed from sheds or pens by the end of the working day in which they were discovered;
2	Covered anaerobic pond (CAP), including biogas collection and flaring	(a) Must be operated to ensure stormwater runoff, including roof runoff, is excluded from entering the pond; (b) An operational freeboard of at least 300 mm must be maintained at all times; (c) Effluent from the CAP must only be released to the settlement trenches; (d) Must be maintained as a gas tight enclosure at all times whilst operational; (e) Effluent must be continuously stirred to break up suspended solids and avoid the settlement of solids; (f) CAP must be operated with safety vents and gas and pressure monitors; (g) Effluent from the CAP must only be released to the settlement trenches; (h) Biogas extracted from the CAP must be directed to the flare pad, for re-pressurisation; (i) Flaring must only occur under normal operating conditions for purging requirements; (j) Flaring emissions must occur at least 3 m above as-built ground level;
3	Settlement trenches	(a) Must be rotated at least once every 12 months or where sludge takes up more than 75% of the design capacity of the trench, whichever is sooner; (b) Must be operated to ensure stormwater runoff, including roof runoff, is excluded from entering the trenches; (c) Effluent from active trenches must only be released to the facultative pond; (d) Sludge removed from trenches must be directly taken off-site by a licensed controlled waste carrier for disposal or further processing; (e) An operational freeboard of at least 300 mm must be maintained at all times;
4	Facultative pond	(a) Must be operated to ensure stormwater runoff, including roof runoff, is excluded from entering the pond; (b) An operational freeboard of at least 300 mm must be maintained at all times;
5	Evaporation pond	(a) Must be operated to ensure stormwater runoff, including roof runoff, is excluded from entering the pond; (b) An operational freeboard of at least 500 mm must be maintained at all times;
6	Carcass disposal pit	(a) Deceased animals must be placed within the pit within 24 hours of death; (b) Carcasses must be buried at least 2 m above the highest known groundwater table;

	Site infrastructure	Operational requirement
		(c) All carcasses must be covered with at least 500 mm of soil immediately after being disposed within the pit.

18. During time limited operations, the works approval holder must undertake inspections of the scope and type and at the corresponding frequency specified in Table 6.

19. Where any inspection required by condition 18 identifies an appropriate level of environmental protection is not being maintained, the works approval holder must:

(a) take corrective action to mitigate adverse environmental consequences as soon as practicable; and
(b) maintain a written log of all inspections undertaken, with each inspection signed off by the person who conducted the inspection.

Table 6: Inspection of infrastructure requirements

Scope of inspection	Type of inspection	Frequency of inspection
WWTS, including all channels, sumps, pipework and drainage lines, trenches and ponds	Visual integrity (including signs of leakage), pipe blockages, sludge levels and freeboard capacity	Daily whilst operating, monthly if not operating
Drains, pits and sumps, pond inlets and outlets	Visual integrity (including signs of leakage and deterioration), solids accumulation	After each flush

Monitoring

General monitoring

20. The works approval holder must ensure that:

(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11; and
(c) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured.

21. The works approval holder must ensure that quarterly monitoring is undertaken at least 45 days apart.

22. The works approval holder must ensure that all monitoring equipment used on the premises to comply with conditions of this works approval is calibrated in accordance with the manufacturer's specifications.

23. The works approval holder must, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

Groundwater monitoring

24. During time limited operations, the works approval holder must monitor and record the results of ambient groundwater during the construction phase and time limited operations phase for concentrations of the identified parameters in accordance with Table 7.

Table 7: Monitoring of groundwater requirements

Monitoring point and ref	Parameter	Unit	Averaging period	Monitoring frequency[2]
MW5, MW6, MW7, MW8,	Standing water level[1]	m (AHD) m (BGL)	Spot sample (in-field)	Quarterly

Monitoring point and ref	Parameter	Unit	Averaging period	Monitoring frequency[2]
MW9, MW10, MW11, MW12	pH[1]	-		
	Electrical conductivity @ 25°C[1]	µS/cm	Spot sample (laboratory determined)	
	Total nitrogen, Ammonia nitrogen	mg/L		
	Total phosphorus			
	Total dissolved solids			
	Biological oxygen demand			
	Na, K, Ca, Mg, Cl, SO_4, HCO_3 and As			

Note 1: In field, non-NATA accredited analysis permitted.
Note 2: Monitoring must commence within 30 days from the date of bore installation.

25. The works approval holder must monitor and keep records in accordance with the requirements of Table 8.

Table 8: Monitoring and recording of inputs and outputs

Input / Output	Parameter	Units	Frequency
Animals received and dispatched at the premises	Animals	Number, specified for each pig class	Total monthly summary for each piggery shed, per piggery module
Deceased animals			Monthly
Dried solid waste (pond sludge) removed from premises	Solid waste, details of who accepted the waste and the receiving premises	Cubic metres	Each load removed from the premises

Complaints management

26. The works approval holder must investigate any complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the department or another party) about any alleged emissions from the premises.

27. Following receipt of a complaint directly from a complainant about any alleged emissions from the premises, the works approval holder must:

(a) respond to the complainant within 72 hours of receipt of the complaint; and
(b) within 10 calendar days of receipt of the complaint, provide a summary of the outcomes of any investigation conducted in response to the complaint, including any corrective and preventative actions taken in response to the complaint, unless such communication is not requested by the complainant.

Records and reporting (general)

28. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (if provided);
(b) the time and date of the complaint;
(c) the complete details of the complaint and any other concerns or other issues raised;
(d) the complete details of any activities being undertaken, where, and the weather and wind conditions at the time of the complaint;

(e) the complete details and dates of any investigation conducted in response to the complaint;
(f) a summary of the findings of any investigation conducted in response to the complaint, including the details of the person(s) responsible for the investigation;
(g) a summary of any corrective and preventative actions taken in response to the complaint;
(h) a summary of the time taken to respond to the complaint; and
(i) a summary of all communications with the complainant.

29. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1;
(b) any maintenance of infrastructure that is performed in the course of complying with condition 17;
(c) records of pen cleaning frequency, settlement trench rotations and frequency of solids waste removal from the hardstand pad in the course of complying with condition 17;
(d) the log of inspections required by condition 19, including details of any corrective action(s) taken and associated timeframes;
(e) results of groundwater monitoring required by condition 24;
(f) records of inputs and outputs in accordance with condition 25; and
(g) records of the investigation of complaints required by condition 28.

30. The books specified under condition 29 must:

(a) be legible;
(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;
(c) be retained by the works approval holder for the duration of the works approval; and
(d) be available to be produced to an inspector or the CEO as required.

Notification requirements

31. The works approval holder must notify the CEO, at least 14 days prior to, the commencement of stocking any pigs within the Moora 2 module.

Definitions

In this works approval, the terms in Table 9 have the meanings defined.

Table 9: Definitions

Term	Definition
AHD	means Australian Height Datum
AS 1289	means the most recent version and relevant parts of the Australian Standard AS 1289 *Methods of testing soils for engineering purposes*
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 Water quality – sampling – guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples, as amended from time to time
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 Water quality – sampling – guidance on sampling groundwater, as amended from time to time
ASTM D5092/D5092M16	means the ASTM international standard for Standard practice for design and installation of groundwater monitoring wells (Designation: ASTM D5092/D5092M-16), as amended from time to time
averaging period	means the time over which a limit or target is measured or a monitoring result is obtained
BGL	means below ground level
books	has the same meaning given to that term under the EP Act
bore	has the same meaning as 'well' given in ASTM D5092/D5092M16
CAP	Covered Anaerobic Pond
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
condition	means a condition to which this works approval is subject under s.62 of the EP Act
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act
Environmental Compliance Report	means a report to satisfy the CEO that the conditioned infrastructure and/or equipment has been constructed and/or installed in accordance with the works approval
EP Act	means the *Environmental Protection Act 1986* (WA)
freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point
licensed controlled waste carrier	means a person licensed as a carrier under the Environmental Protection (Controlled Waste) Regulations 2004 to transport animal effluent and residues (K100)
NATA	National Association of Testing Authorities, Australia
NATA accreditation	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis
pig class	refers to the different classes of pigs, depending on sex, age, weight and/or purpose within a piggery, including breeding males (boars) and females

Term	Definition
	(sows, gilts), and progeny (suckers, weaners, growers, finishers and heavy finishers)
piggery module	means the Moora 2 and Moora 3 piggery modules, with each module comprising the infrastructure specified for that module in Table 1
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
prescribed premises	has the same meaning given to that term under the EP Act
qualified professional engineer	means a person who: (a) holds a tertiary academic qualification specialising in geotechnical or civil engineering; and (b) has a minimum of 3 years of experience working in the area of geotechnical or civil engineering; or is otherwise approved by the CEO to act in this capacity
quarterly	means the 4 inclusive periods from 1 January – 31 March, 1 April – 30 June, 1 July – 30 September, and 1 October – 31 December in the same year
spot sample	means a discrete sample representative at the time and place at which the sample is taken
Standard Pig Unit (SPU)	has the same meaning given to that term under the *National Environmental Guidelines for Indoor Piggeries (NEGIP)*, Pork Australia Ltd, May 2018, being a pig equivalent to a grower pig (average weight 40 kg) based on volatile solids production in manure
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions, including the initial stocking of sheds and commissioning of the WTS (initial flushing of effluent to the anaerobic pond)
works approval	refers to this document, which evidences the grant of the works approval by the CEO under s.54 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
WTS	Wastewater Treatment System; each piggery module has its own WTS comprising a CAP, two settlement trenches, a facultative pond and an evaporation pond

END OF CONDITIONS

Schedule 1: Maps

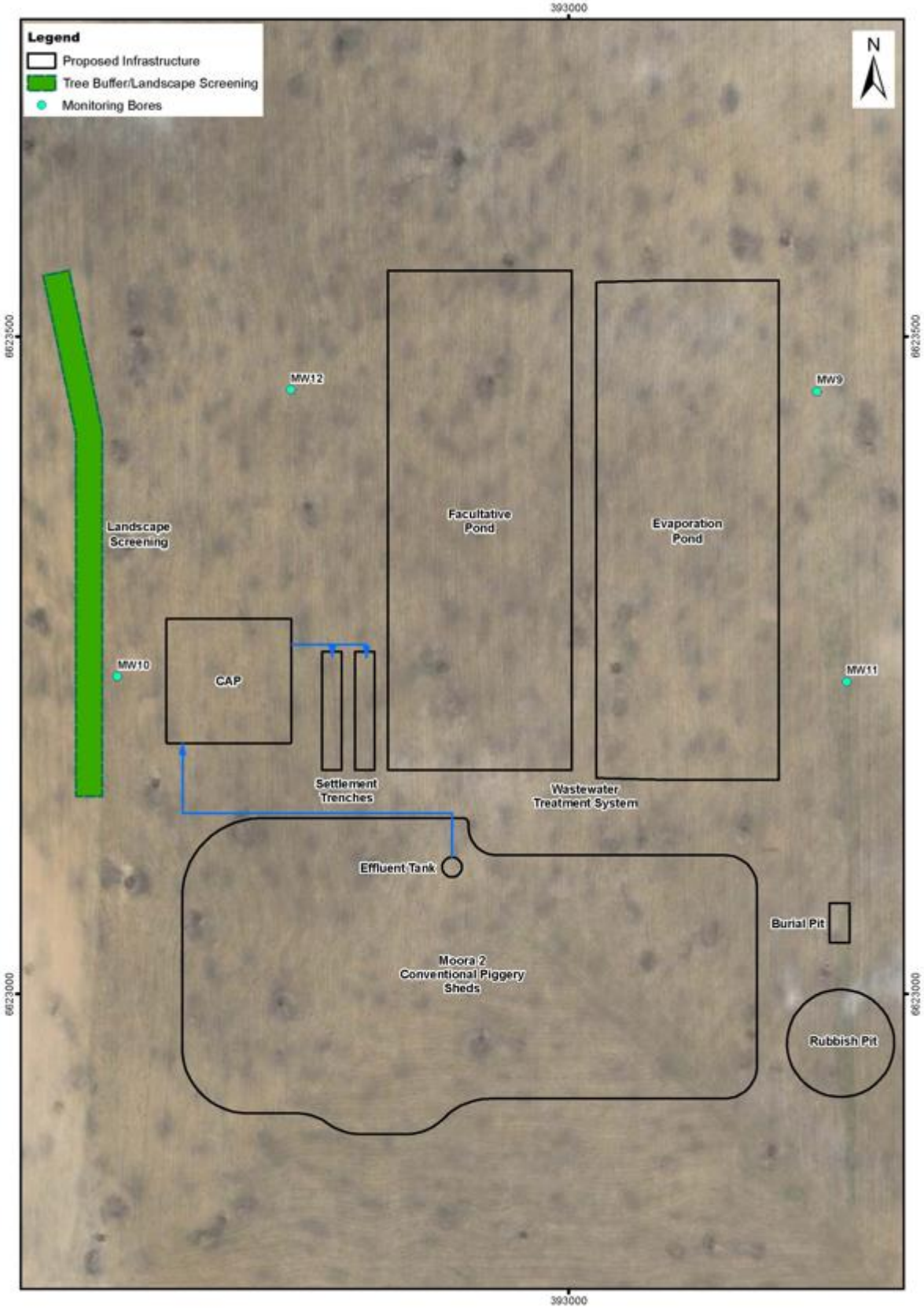
Premises map

The boundary of the prescribed premises is shown in the map below (yellow line), in addition to the location of the proposed ‘Moora 2’ and ‘Moora 3’ piggery modules.

Schedule 1: Maps

Map of infrastructure

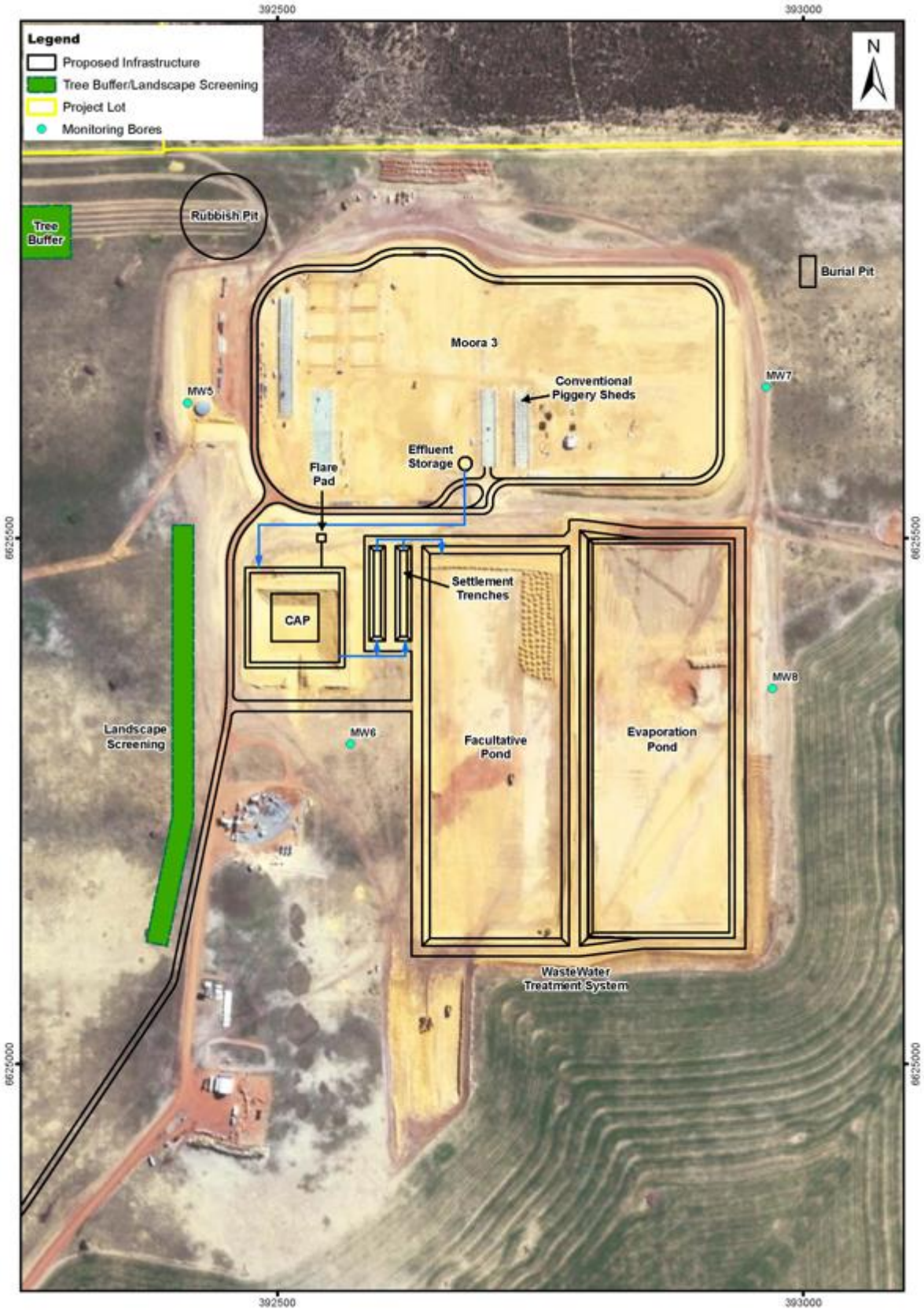
The location of key WWTS infrastructure for Moora 2 is shown in the map below.



Schedule 1: Maps

Map of infrastructure

The location of key WWTS infrastructure for Moora 3 is shown in the map below.



Schedule 2: Clay liner characteristics

Item	Test method	Pre-qualification testing frequency	Frequency of field compliance testing	Acceptance criteria
Particle size distribution (PSD)	AS 1289 3.6.1	3 per material source	3 per pond liner	As provided below
Particles passing 53-mm sieve	AS 1289 3.6.1			100%
Particles passing 19-mm sieve	AS 1289 3.6.1			>90%
Particles passing 2.36-mm sieve	AS 1289 3.6.1			>70%
Particles passing 0.075-mm sieve	AS 1289 3.6.1			>30%
Maximum particle size	AS 1289 3.6.1			40 mm
Atterberg Limits	AS 1289 3.1.2, 3.2.1, 3.3.1, 3.4.1	3 per material source	3 per pond liner	As provided below
Plasticity Index	AS 1289 3.3.1			≥10% and above Casagrande A line
Liquid Limit	AS 1289 3.1.2			30–60%
Permeability (remoulded)	AS 1289 6.7.3	2 tests per material source		≤1 x 10^{-9} m/sec (300-mm thick clay pad liner
Permeability on undisturbed tube samples collected from the completed pad liner	AS 1289 6.7.3		2 tests per constructed pad liner	≤1 x 10^{-9} m/sec (300-mm thick clay pad liner
Emerson Class Number	AS 1289 3.8.1	3 per pad liner	3 per pad liner	>4
Calcium Carbonate content	USEPA	3 per pad liner	3 per pad liner	<15%

Item	Test Method	Pre-qualification testing frequency	Frequency of Field Compliance Testing	Acceptance criteria
Dry Density	AS 1289 5.1.1 or 1289 5.7.1		As provided in Table 8.1 of AS 3798–2007	Minimum dry density ratio of 95% relative to standard or a minimum Hilf density ratio of 95% standard
Moisture Content	AS 1289 5.1.1 or AS 1289 5.7.1		Same as for Dry Density testing	0% to +3% of the Standard Optimum Moisture Content (SOMC) or within a Hilf moisture variation of 0% to +3%