Application for Licence

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L9338/2022/1
Applicant	Westpork Pty Ltd
ACN	009 148 879
File number	DER2018/000976-1
Premises	Westpork – West Pinjarra 502 and 503 Sutters Lane WEST PINJARRA WA 6208 Legal Description- Lot 502 on Deposited Plan 54832 Certificate of Title Volume 2677 Folio 599 and Lot 503 on Deposited Plan 54832 Certificate of Title Volume 2677 Folio 600
Date of report	28/07/2022
Proposed Decision	Licence granted

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1. Decision summary

Licence L9338/2022/1 has been granted to Westpork Pty Ltd for the Pinjarra piggery (the 'premises'), located at Lots 502 and 503 on Sutters Lane, West Pinjarra. The decision to grant the licence was based on an assessment of potential risks to the environment and public health from emissions and discharges during the operation of the premises, as documented in this Decision Report.

2. Scope of assessment

2.1 Regulatory framework

The department has considered its Regulatory Framework and relevant policy documents (available at https://dwer.wa.gov.au/regulatory-documents) in completing the assessment documented in this Amendment Report.

2.2 New licence application

The applicant's previous licence for the premises (L9142/2018/1) expired on 15 June 2022 due to an administrative error on the part of the department. To rectify this issue, Westpork applied for a new (replacement) licence on 30 June 2022, under section 57 of the *Environmental Protection Act 1986* (EP Act).

The new licence application proposes no changes to existing operations at the premises (except for an increased authorised design capacity of 7,000 SPU - see Section 2.3). Given it is unlikely that site conditions have changed since the previous licence expired, the Delegated Officer has determined that no further assessment is necessary regarding the new licence application.

2.3 Licence L9142/2018/1 amendment application

Westpork submitted an application to the department on 21 April 2021 to amend their previous licence L9142/2018/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments were sought:

- Authorisation to operate new emission control infrastructure authorised under works approval W6292/2019/1, including upgrades to the wastewater treatment system and odour management infrastructure (detailed further in Section 3.4); and
- An increase in the authorised design capacity from 3,121 standards pig units (SPU) to 8,222 SPU. On 30 June 2022, the applicant advised that they would seek a revised authorised design capacity of 7,000 SPU.

The department was undertaking an assessment of this licence amendment application when licence L9412/2018/1 expired on 15 June 2022. Therefore, the Delegated Officer has determined to streamline the assessment process and incorporate the licence amendment assessment into this decision report.

The licence amendment application also requested a change to the prescribed premises boundary to incorporate Lot 503 on Deposited Plan 54832, which Westpork acquired in 2019. However, the Delegated Officer has noted that Lot 503 was previously incorporated within the prescribed premises boundary through a licence amendment issued 29 April 2020, so this amendment is not required.

2.3.1 DWER initiated assessment

During assessment of the licence amendment outlined in Section 2.3, the Delegated Officer noted that the construction and operation of a composting bunker facility built at the premises

in 2019 was not referred to the Department for assessment of potential impacts to the environment and human health. Therefore, the design and operation of the composting bunker will also be assessed in this decision report to determine if any regulatory controls are required to lower the risk of impacts to an acceptable level.

3. Premises overview

This Section provides an overview of the premises location, history, existing operations and proposed operations outlined in the amendment application. The risk of impacts to the environment and public health from the proposed operations is assessed in Section 5.

3.1 Location and surrounding land use

The premises is located within the Peel region of Western Australia, about 8 km southwest of the Pinjarra town site in the Shire of Murray. The land surrounding the premises is semi-rural and agricultural, generally comprising low density cattle, sheep and lifestyle lots. The premises is situated within the *Environmental Protection Peel Inlet - Harvey Estuary Policy 1992* area and there are wetlands and drainage lines within the premises boundary.

3.2 Site history

Licence L9142/2018/1 was transferred to Westpork (herein referred to as the 'applicant') on 17 May 2019 after the previous occupier, GD Pork Pty Ltd (GD Pork), went into administration. GD Pork commenced expansion works under works approval W5687/2014/1 (granted 28 September 2015) to increase the premises design capacity from 3,121 SPU to 6,854 SPU. However, the works were not completed in accordance with all design and construction specifications in the works approval. Consequently, new infrastructure including a covered anaerobic digester (CAD) and three HDPE-lined evaporation ponds were not bought into operational service. The existing wastewater treatment system, comprising clay-lined anaerobic treatment, facultative and evaporation ponds, remained in operation despite having insufficient capacity to manage the level of wastewater generated at the premises and being recognised as a dominant source of odour emissions.

The applicant proposed several actions to improve waste management and mitigate associated odour emissions at the premises, including desludging the existing clay-lined ponds, upgrading the CAD and constructing new odour and waste management infrastructure, including two settlement trenches and a biogas management system. These works were authorised under works approval W6292/2019/1 on 20 December 2019 and are now completed.

In July 2019, the Department issued an Environmental Protection Notice (EPN) to Westpork to restrict animal numbers on the premises from 7,980 SPU to the licence limit of 3,121 SPU. This was considered a necessary action to reduce odour emissions from piggery operations until Westpork completed actions to reduce odours and improve waste management.

3.3 Current operations

3.3.1 Pig processing

The piggery operates as a 'sow breeder facility' incorporating mating sheds, dry sow sheds, farrowing sheds and a workshop. The applicant currently stocks a maximum herd size of 8,222 SPU which is based on a maximum of 2,800 sow breeders (Table 1). The applicant has requested the premises design capacity be increased to 7,000 SPU to reflect current operations, which is significantly higher than the existing licence limit of 3,121 SPU.

Potential changes to the existing risk profile from an increased stock number is to be assessed in this Decision Report. An assessment of the maximum herd size (in SPU) the

premises can accommodate without causing an unacceptable risk of odour impacts to human receptors is detailed in Section 5.3.

Table 1 Current herd composition at maximum stock (2,800 sows) (Aurora Environmental 2021)

PIG CLASS	SPU FACTOR	2800 SOWS - MAXIMUM NUMBERS	
		NUMBER OF ANIMALS	SPU
Gilts	1.80	518	932
Boars	1.60	31	50
Gestating Sows	1.60	2,323	3,717
Lactating Sows	2.50	477	1,193
Suckers	0.10	6,316	614
Weaners	0.51	436	225
Porkers	1.08	350	376
Growers	1.48	350	517
Finishers	1.71	350	599
Site Total		11,151	8,222
Number Pigs (excluding suckers)		4,835	

Pigs are housed within 10 conventional sheds, each serviced by pull-plug effluent systems that store wastewater comprising faeces, urine, spilt food that falls through slatted floors into underfloor pits. The pits are drained at least fortnightly using gravity release pipes in the center of the pits. Following drainage, the pits are partially refilled with clean water to prevent deposited manure from sticking to the floor of the pit.

3.3.2 Wastewater treatment

Wastewater from the conventional sheds enters a concrete wastewater sump situated among the sheds. This wastewater sump uses a float switch to drain its contents to the clay-lined anaerobic pond. The partially treated wastewater is then discharged via a gravity fed system to an adjacent clay-lined facultative pond that doubles as an evaporation pond. A third clay-lined evaporation pond provides contingency storage and evaporation capacity.

The applicant commenced a major desludging operation in the clay-lined anaerobic pond in December 2020 to increase capacity and reduce odour emissions from sludge exposure above the waterline. Removed sludge was pumped into geofabric bags placed on a temporary HDPE-lined pad, referred to as the sludge drying compound. A small pump drained leachate and rainwater from this compound to the first clay-lined wastewater treatment pond.

The applicant intended to sell the dried sludge material to farmers (Aurora Environmental 2021). On 21 July 2022, the applicant confirmed that all dried sludge had been removed from the pad and the infrastructure had been decommissioned.

Integrity of the clay-lined evaporation ponds

The applicant commissioned Bioscience Pty Ltd to undertake a geotechnical investigation in July 2019 to determine the permeability of the clay liners in the existing anaerobic, facultative and evaporation ponds. The investigation included a visual inspection of the banks of each pond, though clay liner samples were only collected from the base of the third (evaporation) pond given it was close to empty at the time of the inspection.

Liner permeability between 1.2 x 10^{-9} m/s and 7.3 x 10^{-11} m/s was reported from four sample points across the base of the evaporation pond. During the investigation it was verified that the lining comprised a double-lined clay layer. No evidence of damage or leakage was found in the outer wall of the clay-lined evaporation pond. Bioscience Pty Ltd concluded that the sampled evaporation pond was impermeable based on the results of the permeability testing, the intact nature of the pond liner and in the absence of any evidence of leakage.

3.3.3 Composting

The applicant constructed a composting bunker facility adjacent to the piggery sheds in 2019. Operation of the composting bunker has not previously been assessed by the department for potential impacts to the environmental or human health. Therefore, the Delegated Officer has determined that the potential risks associated with this activity are to be assessed in this amendment report.

Operation of the composting facility replaces the historical practice of disposing dead pigs via on-site burial. The facility has three operational bunkers and one storage bunker with a total capacity of 855 m^3, which is sufficient capacity for the estimated annual volume (504 m^3) of total feedstock (carcasses and sawdust) to be composted (Aurora Environmental 2021).

About 200 kg of carcases are disposed daily into the operational bunkers. A 300 mm layer of sawdust is placed on the concrete floor prior to laying the bodies to provide carbon close to the underside of the carcasses and absorb leachate. Another 300 mm layer of sawdust is used to cover the top layer of bodies and ensure no part is exposed. About 3.6 tonnes of sawdust is used per tonne of carcasses. The annual combined mass of carcasses and sawdust used in the composting process is about 244 tonnes (504 m^3) per year, which equates to about 170 tonnes of finished compost produced per year (by applying a 30% mass reduction).

The decaying carcasses have about 90% water content which generally supplies enough moisture for composting. Additional water is added if the compost dries too quickly in summer. Rainfall and leachate is retained within the bunker by bunding and a gradient in the concrete floor that drains back toward the composting bays (Aurora Environmental 2021). During a site inspection on 19th June 2020, department officer observed a large volume of leachate accumulated within the bunkers due to lack of drainage.

The applicant will reuse some of the composted material as an inoculant and as the carbon source to compost a new batch depending on the moisture content. The remaining finished compost will be directed off-site and sold to local farmers. Typical nutrient analysis of the finished product is expected to be 1.5% N, 0.5% P and 0.3% K (Aurora Environmental 2021).

3.4 Proposed operations

The applicant has completed the construction and installation of infrastructure authorised under W6292/2019/1. This Section outlines the operation of this infrastructure, which includes a CAD, biogas management system and two settlement trenches designed to improve wastewater treatment and odour management at the premises. The construction and design details for this infrastructure are listed in Table 1 of revised licence L9338/2022/1.

3.4.1 Upgraded wastewater treatment system

The applicant proposes to use the CAD to undertake the primary treatment of the wastewater produced at the premises. Wastewater (including solids) will be collected from the sheds and directed to the CAD via existing concrete sump. The anaerobic break down of volatile solids in the digester produces digestate and biogas. Wastewater containing digestate will be deposited into one of the two new settlement trenches to further retain and remove solids. Biogas produced by the CAD will be sent to the new biogas management facility for the generation of power and heat, or flared, as appropriate.

Covered anaerobic digester (CAD)

The CAD will perform the primary anaerobic breakdown of volatile solids in the effluent with an expected volatile solids reduction of between 80 and 83%. The CAD is designed with a retention time of over 45 days and a capacity of 5,475 kL. Four angled mixer systems are installed to ensure a high percentage of the sludge is suspended in the water column to promote the optimal breakdown of volatile solids. The positive mix design eliminates the buildup of sludge in the digester so it can maintain its maximum treatment capacity throughout the operational life of the facility, thus eliminating the need for desludging.

A heat exchanger controls the temperature to further maximise the reduction of volatile solids. A permeable drain with an automatic pump under the concrete base is designed to prevent ground water pressure build up between the earth and the CAD's concrete base.

Gases captured within the fully sealed HDPE cover are to be transferred through pipework to the biogas management system. The cover contains four 100 mm emergency vents controlled by PVC pipes filled with water that open in response to a certain of level of gas pressure. The CAD can be operated remotely to provide 24/7 real time monitoring of all key components, allowing potential problems to be detected and addressed before they affect this system's biology.

Settlement trenches

Two settlement trenches were constructed, each 70 m long, 12 m wide and 1.3 m deep. A site inspection conducted by department officers on 28 June 2022 confirmed that the trenches were built with a base at or above ground level.

Only one settlement trench will be operational (online) at a time to enable the drying and removal of accumulate solids in the other (offline) trench. An effective treatment depth of 0.8 m and minimum 500 mm freeboard will be maintained in the online trench. Rotation will occur once the operational trench is filled just shy of the 500 mm freeboard mark. Solids are to be removed from the offline trench using an excavator when they achieve a spadable consistency. A layer of sludge will be retained when desludging the trenches to protect liner integrity.

Existing clay-lined ponds

The applicant intends to use the three existing clay-lined treatment ponds as evaporation ponds. The clay-lined ponds will be filled with wastewater from the settlement trenches in the existing order (treatment to facultative to evaporation).

The applicant estimates the former clay-lined anaerobic pond will have sufficient capacity to treat wastewater once ongoing desludging works are completed. This will enable the CAD and settlement trenches to be bypassed in the event of an emergency or during maintenance activities.

Revised water balance

Aurora Environmental were commissioned by the applicant to prepare a revised water balance for the wastewater treatment system by calculating the inflow and outflow of the three clay-lined ponds. The purpose of the water balance was to determine whether the existing wastewater treatment infrastructure had the capability to contain the wastewater produced by the increased herd size at the premises. The HDPE-lined evaporation ponds constructed under works approval W5687/2014/1 were excluded from the model as they were not constructed in accordance with all specified design requirements. The settlement trenches were also excluded from the water balance given they were undergoing permeability testing at the time the study was commissioned.

Aurora Environmental utilised mass balance model PigBal (v4.094) to estimate the waste generation by the pigs at the premises, which was then used to prepare the revised water balance model. The water balance assessed the risk of overtopping in the final clay-lined

evaporation pond based on two years of mean rainfall and two years of annually adjusted 90th percentile rainfall. The following assumptions were made in the water balance calculation:

- All sludge is removed from surface of all three existing clay-lined ponds; and
- Wastewater levels in the existing clay-lined ponds 1, 2 and 3 are currently at 100%, 80% and 25% capacity.

The revised water balance indicates that overtopping is very unlikely to occur in the final clay-lined evaporation pond over two consecutive years of mean or high rainfall (Figure 1). Even under the conservative scenario of successive 90th percentile rainfall years, the results indicate that water levels in the final clay-lined evaporation pond will not exceed the freeboard level. The Delegated Officer considers that the modelling and its inputs are appropriate in the context of this application.

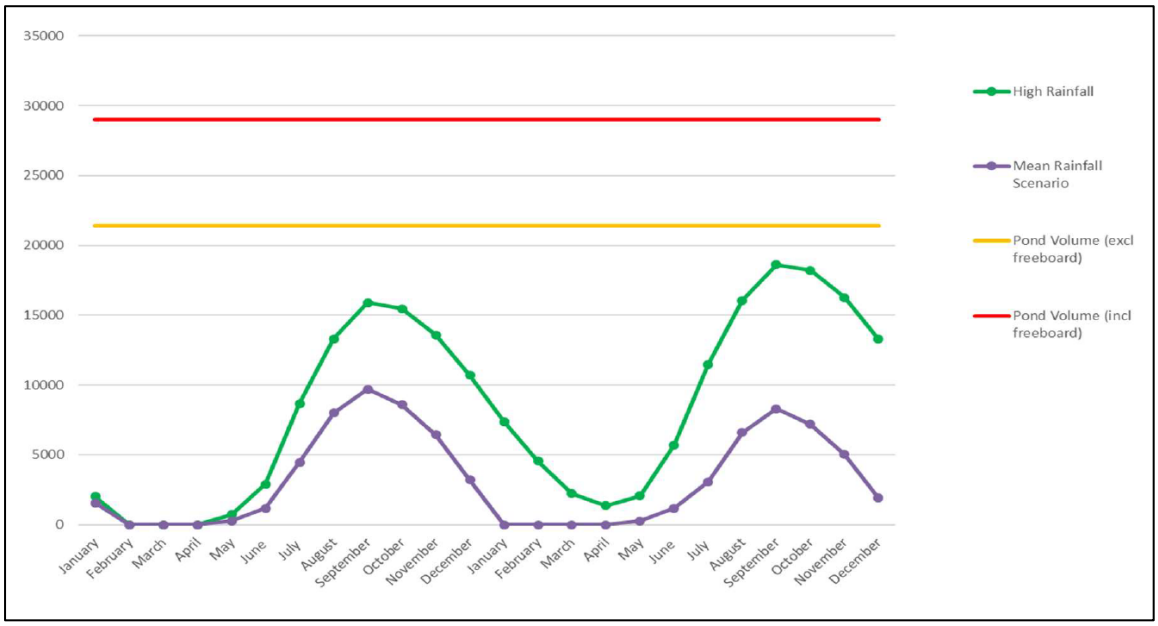

Figure 1 Estimated water level in the final clay-lined evaporation pond over two consecutive mean and high (90th percentile) rainfall years

3.4.2 Biogas disposal

The biogas management system is designed to facilitate the capture and reuse of biogas produced by the CAD. Biogas is transferred to an 85 kilowatt hour (KW/h) biogas generator working in tandem with the site's existing diesel generator to form a stable power supply for the piggery. An enclosed 6 m high flare will be used to combust the biogas when the biogas generator is offline. This will restrict the ventilation of biogas to exceptional circumstances which the applicant anticipates will reduce odour emissions from the premises. A two-stage hydrogen sulfide scrubbing system installed in the biogas facility is further anticipated to destroy potentially odorous gas emissions from the CAD.

3.4.3 Desludging activities

The applicant is proposing to successively de-sludge the clay-lined facultative and evaporation ponds by them taking offline, allowing them to dry out and removing sludge using earth moving equipment. The process is proposed to commence in the summer of 2022/2023, with the drying of the ponds likely to take several years to ensure the sludge is not odorous when removed. Sludge removal from the ponds will be scheduled during summer to expedite the drying process, with sludge to be placed on a lined drying bed with permeability of less than 10^{-9} m/s. Dried sludge will be removed from the premises as soon as a spadable consistency is achieved.

The whole process likely to take six to eight years. Prior to the commencement of any desludging activities, the applicant proposed to submit a management plan to the department demonstrating how the activity will be undertaken while maintaining operations at the site and mitigating off-site impacts.

4. Legislative context

4.1 Compliance history

4.1.1 Variations to works approval W6292/2019/1

The compacted clay liner in each settlement trench underwent additional permeability testing following construction after initial attempts to fill one of the trenches resulting in a loss of water via seepage. The applicant provided evidence that the trench liners were reworked and compliant with permeability requirements on 7 December 2021.

4.1.2 Environmental Protection Notice

The premises remains subject to an EPN issued on 25 July 2019. This EPN notes:

- The premises was operating at 7,890 SPU, in exceedance of the licence design capacity of 3,121 SPU;
- The wastewater treatment system was significantly overloaded due to the accumulation of sludge, with insufficient capacity to treat the effluent effectively;
- The volume of sludge in the former clay-lined anaerobic treatment pond was sufficient that sludge was exposed above the surface of the pond, resulting in a significant risk of odour emissions; and
- Between 1 January 2019 and 10 July 2019, the department received 70 complaints of odour and noise impacting the amenity of members of the local community.

This EPN required the applicant to reduce the number of animals at the premises to not more than 3,121 SPU by 15 June 2020, unless operation of the premises at a higher number of animals is authorised by a licence or works approval issued by the department. The applicant continues to operate the site as a 2,800 sow breeder facility (as at 15 April 2021), which corresponds to 4,835 pigs (excluding suckers) and 8,222 SPU (Aurora Environmental 2021).

4.1.1 Complaint history

The Incident and Complaints Management System (ICMS) is an internal DWER system used to record complaints received and potential non-compliances requiring investigation. A review of this system identified a high number of odour complaints in 2020 and 2021 (Table 2). The number of noise complaints was also high in 2020 but dropped off significantly in 2021.

A review of recent complaints reported against the premises from 1 July 2021 to 14 March 2022 identified 43 odour complaints during this period, despite the installation of odour mitigating infrastructure upgrades authorised under W6292/2019/1 on 20 December 2019.

Table 2 Summary of noise and odour complaints submitted to the department since January 2019

Complaint type	Year			Total
	2019	2020	2021	
Noise	87	135	2	224
Odour	52	171	91	314
Total	139	306	93	538

4.2 Contaminated Sites Act 2003

Lot 502 on Deposited Plan 54832 was classified as 'possibly contaminated – investigation required' on 15 April 2015 under the *Contaminated Sites Act 2003* (CS Act) due to the detection of elevated nutrient levels (nitrogen and phosphorous) in groundwater beneath the site. Elevated nutrient levels are known to occur in both up-gradient and downgradient monitoring bores, which may indicate the elevated nutrient levels relate to migration from sources up-gradient of the premises, sources within the premises or a combination of both.

Groundwater quality beneath Lot 503 may be comparable to Lot 502 due to their proximate location. However, Lot 503 is yet to be reported under the CS Act given there are no monitoring bores on Lot 503 to assess potential impacts to groundwater.

5. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020a).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

5.1 Source-pathways and receptors

5.1.1 Emission sources and pathways

The key emissions and associated actual or likely pathways arising from operation of the upgraded wastewater treatment infrastructure, biogas management facility and composting bunker are detailed in Table 3 below. Control measures the applicant has proposed to assist in controlling these emissions are provided in Table 5.

Table 3: Emission sources and potential pathways

Emission	Sources	Potential pathways
Odour	• Piggery sheds with increased stock number • Three clay-lined evaporation ponds • Composting bunker • Two settlement trenches • CAD	Air/wind
Noise	• Piggery sheds with increased stock number • Biogas management system	Air/wind
Nutrient rich wastewater	• CAD • Two settlement trenches • Three clay-lined treatment ponds	Runoff into surface water features and seepage into soil and groundwater, caused by pond overtopping or transfer pipe leaks
		Seepage through liners into the underlying soil and groundwater
Leachate	• Compost bunker facility	Runoff and seepage into the underlying soil and groundwater

5.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020a), the Delegated Officer has excluded employees, visitors and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 4 below provides a summary of potential human and environmental receptors that may be impacted by activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental siting* (DWER 2020b)).

Table 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Residence or infrastructure used to undertake agricultural operations	Distance from primary activity infrastructure (sheds or ponds): • 460 m north of the piggery sheds • 570 m north of piggery sheds • 450 m south of the final clay-lined pond (nearest residential receptor) • 660 m south of the final clay-lined pond • 770 m south of the final clay-lined pond • 790 m south of the final clay-lined pond
Environmental receptors	**Distance from prescribed activity**
Geomorphic wetlands	Wetlands with a classification of ‘Multiple Use’ and ‘Resource Enhancement’ are situated within the premises. A wetland with a classification of ‘Conservation’ is situated within 2.2 km of the premises.

Groundwater resources	The premises is situated within the Murray Groundwater area as proclaimed under the Rights in Water and Irrigation Act 1914 (RIWI Act). Standing groundwater levels measured in bores on Lot 502 in the 2020-2021 annual reporting period ranged from 0.95 mbgl (bore 2A in December 2020) to 2.5 mbgl (bore 7A in June 2020).
Artificial drainage lines	An artificial drainage channel between the HDPE-lined evaporation ponds and settlement trenches drains northwest and discharges into the Coolup Main Drain immediately north of the premises. The Coolup Main drain discharges into the Peel Harvey Estuary.
Peel Harvey Environmental Protection Policy 1992	The premises is situated within the Peel Inlet – Harvey Estuary Environmental Protection Policy Area.

5.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020a) for those emission sources which are proposed to change and considers potential source-pathway and receptor linkages as identified in Section 5.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 5.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The licence L9338/2022/1 that accompanies this decision report authorises emissions associated with the operation of the premises, including the upgraded wastewater treatment infrastructure, biogas management facility and composting bunker.

The conditions in the revised licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 5. Risk assessment of potential emissions and discharges from changes to the premises operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Applicant's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant's controls**				
Operation of piggery sheds (with an increased maximum stock number of 7,000 SPU)	Unreasonable odour emissions	Air/windborne pathway causing impacts to health and amenity	Neighbouring residences (nearest dwelling 460 m north)	• Pigs to be kept clean and dry and pig health to be maintained to minimise loose stools • Regular emptying of shed pits and removal of manure • Prompt collection and disposal of mortalities to the composting bunker • Maintain drainage lines with a minimum 1-2% slope to ensure they are self-cleaning	C = Moderate L = Possible **Medium Risk** (see Section 5.3)	No	Condition 1, 6 **Condition 2 – Prompt mortalities removal from sheds** **Condition 5 – weekly odour monitoring**	See Section 5.3 for a detailed risk assessment and justification for additional regulatory controls. In summary, the detailed risk assessment identified the risk of unreasonable odour emissions from the sheds impacting on the amenity and health of human receptors to be medium with a maximum stock number of 7,000 SPU, subject to additional regulatory controls. The risk rating is primarily based on an assessment of the minimum separation distance as detailed in the *National Environmental Guidelines for Indoor Piggeries* (NEGIP) (APL 2018) and historical odour complaints against the premises. The Delegated Officer considers that the most effective control to reduce the risk of unreasonable odour emissions from the premises is a restriction on the maximum stock number. In addition, regulatory controls are specified to monitor pig numbers on the premises monthly, empty shed pits twice daily, collect pig mortalities in sheds daily and place them in the composting bunker within 24 hours of discovery. Weekly odour monitoring at the premises boundary (as recommended in the NEGIP) is also specified to reduce the time is takes to identify and mitigate any potential odours.
	Noise			• Ventilated piggery sheds are enclosed. • Enclosed piggery sheds have concrete noise barriers situated in front of the ventilation fan outlets.	C = Minor L = Possible **Medium Risk**	Yes	Condition 1	There is potential for increased pig vocalisation in the piggery sheds due to the higher stock number. However, noise complaints submitted by neighbouring residents significantly decreased from 135 in 2020 to 2 in 2021, despite the herd size increasing to up to 7,000 SPU. Therefore, the Delegated Officer does not consider that the existing risk profile for noise emissions generated in the piggery sheds has changed due to the proposed increase in SPU.
Operation and desludging of new wastewater treatment/containment infrastructure, including: • CAD • Two settlement trenches • Three clay-lined evaporation ponds	Unreasonable odour emissions	Air/windborne pathway causing impacts to health and amenity	Neighbouring residences (nearest dwelling 450 m south)	• CAD designed with a cover to capture potentially odorous biogas • Captured biogas is to be directed to a biogas management system that will eliminate odour via a H_2S scrubber and combustion prior to release through an enclosed flare • Regular pond desludging program to ensure sludge does not breach the surface of the clay-lined evaporation ponds • Settlement trenches will be taken offline when they reach a minimum freeboard of 500 mm. They will be allowed to dry out and desludged as soon as a spadable consistency is achieved • Prior to desludging, the clay-lined evaporation ponds will be taken offline and allowed to dry out • Prior to the commencement of any desludging activities, a management plan will be provided to the department demonstrating how this will be undertaken while maintaining operations at the site and minimising off-site impacts • During adverse operating conditions, the former clay-lined anaerobic treatment pond will have sufficient capacity to undertake anaerobic treatment of the wastewater	C = Moderate L = Possible **Medium Risk** (see Section 5.3)	Yes	Condition 1, 3	See Section 5.3 for a detailed risk assessment and justification for additional regulatory controls. In summary, the detailed risk assessment identified the risk of unreasonable odour emissions from the ponds impacting on the amenity and health of human receptors to be medium with a maximum stock number of 7,000 SPU, subject to additional regulatory controls. The risk rating is primarily based on an assessment of the minimum separation distance as detailed in the *National Environmental Guidelines for Indoor Piggeries* (NEGIP) (APL 2018) and historical odour complaints against the premises. The primary source of odour from the wastewater treatment system will occur during desludging operations. The Delegated Officer considers that the applicant proposed controls to allow sludge in the settlement trenches and ponds to dry out to a spadable consistency prior to desludging will reduce the risk of unreasonable odour emissions at the time of desludging (although this increases the likelihood of longer term, less intense odour emissions as the exposed sludge dries in-situ). The Delegated Officer has also specified the applicant proposed administrative control to submit a desludging management plan prior to undertaking works. The plan is to detail how the sludge will be managed and disposed to mitigate off-site odour emissions, is necessary to lower the risk of impacts to receptors to an acceptable level. The Delegated Officer also considers that the applicant engineering controls such as the CAD cover to capture odorous biogas and desludging program to prevent sludge build up exceeding the waterline in the uncovered clay-lined ponds are sufficient to manage the risk of odour from the wastewater treatment system during routine operations. Desludging will

Risk Event					Risk rating[1] C = consequence L = likelihood	Applicant's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant's controls**				
								address previous sources of odour in the clay-lined ponds, while the covered CAD will replace the previous uncovered, clay-lined anaerobic treatment pond and does not require desludging.
	Wastewater	Pond/trench overtopping or transfer pipe leaks causing overland runoff and impacts to ecosystem health or surface water quality	Soil, groundwater, geomorphic wetlands and drainage channels connected to the Coolup Main Drain	• CAD, settlement trenches and clay-lined ponds designed with sufficient capacity to contain all wastewater and maintain 500 mm freeboard • Wastewater treatment system to be monitored at least every second day for pipe blockages • Daily inspection of drainage lines	C = Moderate L = Unlikely **Medium Risk**	Yes	Condition 1	The Delegated Officer is satisfied that the applicant has demonstrated the wastewater treatment system (inclusive of the CAD and clay-lined evaporation ponds) has sufficient capacity to contain all wastewater generated when operating at 7,000 SPU.
		Seepage through liner causing impacts to groundwater quality	Soil and groundwater 1 m bgl	• CAD designed with HDPE-lined sloped sides and concrete base • Settlement trenches and evaporation ponds are lined with a 300 mm clay layer • Settlement trench base was built above ground level • Sampling of groundwater monitoring bores located up and down-hydraulic gradient of the wastewater treatment system at least twice a year to monitor potential seepage	C = Moderate L = Unlikely **Medium Risk**	No	Condition 1, 7	The settlement trenches were constructed with a base aboveground level with a minimum 300 mm clay liner. The Delegated Officer therefore considers the risk of seepage from the trenches to be acceptable, subject to operational and groundwater monitoring requirements set out in the licence. The risk of seepage from the CAD is considered unlikely due to the applicant design controls include a concrete base and HDPE-lined sides. Recent permeability testing has also validated the liner integrity beneath the final clay-lined (evaporation) pond. Although the former treatment and facultative ponds could not be tested, the Delegated Officer is satisfied that the risk of impacts to groundwater from seepage from the clay-lined evaporation ponds is adequately managed by ongoing groundwater monitoring.
Biogas management system	Noise	Air/windborne pathway causing impacts to health and amenity	Neighbouring residences (nearest dwelling 500 m northeast)	No controls proposed	C = Slight L = Unlikely **Low Risk**	N/A	-	Sufficient separation distance to the nearest receptor (500 m) to mitigate potential impacts from operational noise.
Composting bunker	Unreasonable odour emissions	Air/windborne pathway causing impacts to health and amenity	Neighbouring residences (nearest dwelling 600 m north)	• Cover composting material with a 300 mm thick layer of sawdust • Composting bunkers have sufficiently capacity (855 m^3) to treat 36 tonnes of carcasses every 6 months	C = Minor L = Possible **Medium Risk**	Yes	Condition 1	The composting mortalities (considered a high-risk feedstock) represents a medium risk of unreasonable odour emissions. The bunker is not enclosed as specified in the *DWER Guideline - Better Practice Composting* for compost facilities within 1 km of sensitive receptors. Given the separation distance is less than 1 km, the Delegated Officer has specified that composting material is to be covered with a 300 mm thick layer of sawdust.
	Leachate	Seepage or runoff causing impacts to soil and groundwater quality	Soil and groundwater	• Composting bunker has a concrete base bunded and designed to ensure rainfall/leachate is retained within the bunker • Compost immediately removed from site once composting process is completed	C = Minor L = Possible **Medium Risk**	No	Condition 1 **Condition 1 (Table 1, Row 6) – leachate in bunker is to drain to the CAD**	During an inspection on 19th June 2020 a department officer observed a large volume of leachate accumulated within the bunkers due to lack of drainage. This indicated that the capacity of the bunkers may not be sufficient to contain leachate during heavy rain events. The NEGIP guidelines recommend that significant stormwater volumes caught within the composting area should be directed into the effluent treatment ponds or other stormwater collection ponds. Therefore, the Delegated Officer has specified that the composting bunker is to drain into the wastewater treatment system to reduce the likelihood of leachate surface runoff during heavy rain events.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020a).

Note 2: Proposed applicant's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

5.3 Detailed risk assessment for unreasonable odour emissions generated by operating the piggery sheds, composting bunker and wastewater treatment system

5.3.1 Overview of risk event

The conventional piggery sheds, wastewater treatment system and composting bunker have potential to generate odour emissions with an unreasonable impact to off-site receptors. The premises is currently operating with a maximum stock number equivalent to 8,222 SPU and is requesting an maximum authorised stocking rate of 7,000 SPU, which exceeds the existing assessed and authorised design capacity of 3,121 SPU and increases the potential strength of previously assessed odour sources.

5.3.2 Characterisation of emission and potential impact

Potential odour sources within the sheds include dirty pigs, urine, faeces and spilt feed. Odour is emitted through fan vents in the mechanically ventilated conventional sheds. Open drainage channels and waste sumps may also generate odours if not adequately cleaned.

Potential odour sources from the wastewater treatment system include the uncovered settlement trench and uncovered, clay-lined evaporation ponds. Routine operation of the CAD, settlement trenches and clay-lined ponds is not expected to be a significant source of odour emissions. However, the risk of unreasonable odours increases if functional issues arise in the CAD such as inadequate retention time or process upsets causing wastewater to be odorous due to increased volatile solids and volatile fatty acid content. Odours may also increase if the ponds are not properly functioning due to poor management or sludge is allowed to build-up and breach the waterline.

Biogas produced by anaerobic biological processes within the CAD will contain components such as hydrogen sulfide and ammonia which can be odorous and offensive at low detection and perception thresholds. Given the CAD is fitted with a gas-tight cover to contain and store biogas that will be combusted and flared, the CAD and biogas conveyance and flaring system is not expected to be a source of odour emissions as part of normal day to day operations. However, there is potential for short-term passive release of biogas from the CAD in the event of cover damage, fault or failure.

The nearest residential dwelling is about 450 m south of the piggery sheds. Individual responses to odour emissions may vary depending on age, health status, sensitivity, and odour exposure patterns. Perceived odour intensity may increase or decrease on exposure. Community response to an odour can include annoyance, potentially leading to stress and loss of amenity. Exposure to repeated odour events can create a nuisance effect. Exposure times and frequency of odour emissions depend on day-to-day activities and weather conditions.

5.3.3 Criteria

There is no set concentration criteria for odour assessment. The general provisions of the EP Act make it an offence to cause or allow unreasonable emissions which includes emissions of odour that unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person.

The Delegated Officer considers the S-factor methodology detailed in the NEGIP Guidelines to be a suitable tool to assess the impact of potential odour emissions. Specifically, this methodology provides odour assessment tools to establish whether odour generated by the primary activities of a piggery (e.g. sheds, ponds and composting bunker) will have an unreasonable impact at off-site receptors by determining the minimum distance that should

separate the piggery and nearest receptor (the 'separation distance'). The desludging pad is not considered in the separation distance calculation given it has been decommissioned.

A review of odour complaints from neighbouring residents since the applicant obtained the licence in May 2019 was also undertaken to further assess the likelihood of this risk event occurring (Section 4.1).

The Delegated Officer also compared proposed applicant controls to manage odour at the premises are also assessed against current industry standards (Table 6). These standards include minimum odour standards set out in the draft DWER *Guideline – Better Practice composting* (DWER 2020c). Although this guideline is not applicable to composting premises operating below the production and design capacity for *Category 67A: Compost manufacturing and soil blending*, some minimum standards may be relevant to the activities undertaken at these premises, especially in relation to the transfer and management of high-risk feedstocks. The carcasses composted at the premises are considered high-risk feedstocks.

5.3.4 Assessment

Level 1.5 S-factor calculation

The following formula is provided in the Level 1.5 assessment to determine the minimum separation distance from the piggery sheds or wastewater treatment ponds to the nearest receptor to avoid potentially unreasonable odours:

$$\text{Separation distance (D)} = \text{SPU}^{0.55} \text{ x S1 x S2 x S3 x S4}$$

where

SPU = 7,000

S1 (design factor) = 0.5

S2 (siting factor) = 11.5

S3 (terrain factor) = 1

S4 (wind frequency factor) = 0.54 (with + 20% safety margin)

The design factor is a composite factor determined by multiplying the associated values for a pull plug effluent system ($S1_R$ = 1) and impermeable pond cover for effluent treatment ($S1_T$ = 0.5). The siting factor is also a composite factor determined by multiplying the associated values for the nearest receptor being a legal house ($S2_R$ = 11.5) and a ground surface predominantly comprised of crops and limited ground cover ($S2_s$ = 1). The terrain factor is solely based on the slope between the sheds and the residential dwelling (>1%).

The wind frequency factor is determined by analysing wind rose data and identifying the frequency of the compass wind direction to the nearest receptor (north-northeasterlies) compared to the most frequent wind direction (south-west). In this scenario, wind blows from the north-northeast 34% of the time compared to the south-west (S4 = 34 + 20 [safety margin]).

Entering the values above into the formula, along with the requested maximum SPU (7,000), provides a minimum separation distance of 404 m. As discussed in Section 5.1.2, the nearest rural dwelling is about 450 m south of the wastewater treatment ponds and therefore about 50 m beyond the minimum separation distance in accordance with the NEGIP Guidelines.

The formula can be re-arranged to calculate the maximum number of pigs allowed on-site given the established distance to the nearest receptors (D = 450 m), as follows:

$$Pig\ SPU = (D\ /\ (S1\ x\ S2\ x\ S3\ x\ S4))^{1/0.55}$$

Solving this formula provides a maximum SPU of 8,498, which is higher than the current maximum stocking rate of 8,222 SPU.

Comparison of applicant odour controls to industry standards

Table 6 compares the proposed applicant controls to industry standards for the management of odour emissions at piggeries as detailed in the NEGIP guidelines. Standards are also taken from *Minimising Odour from Piggeries* (Australian Pork Limited 2015), the Queensland Government (Department of Agriculture and Fisheries 2013) and DWER *Guideline – Better Practice Composting* (DWER 2020c).

Separation distance is the primary tool for ensuring odour impacts on potential receptors is mitigated. Where the separation distance is not sufficient, the best way to minimise the risk of odour is to properly manage key infrastructure for activities with the highest potential odour emissions.

A review of Table 6 indicates that the existing and proposed applicant controls meet most of the key industry standards for managing piggery infrastructure. Operation of the CAD and settlement trenches, in addition to desludging the clay-lined evaporation ponds (already completed in the former treatment pond), will help the applicant maintain the active volume for anaerobic treatment and ensure the treatment system has capacity to treat the effluent loading (up to 8,222 SPU). However, odour management could be improved through additional management controls including regular monitoring of odours around the premises boundary and ensuring mortalities are removed from the sheds within 12 hours and composted within 24 hours. The composting bunker should also be fully enclosed and under negative pressure given receptors are located within 1 km.

Table 6 Applicant odour controls compared with current industry standards for the management of piggery infrastructure

Site infrastructure / Control	Operation details (odour controls from applicant)	Guideline requirements/performance measures
Conventional piggery sheds	• Pigs to be kept clean and dry and pig health to be maintained to minimise loose stools • Regular emptying of shed pits and removal of manure • Frequently clean flooring and other dirty and dusty surfaces • Prompt collection of mortalities	• Sheds are frequently cleaned to maintain very clean lanes, pens and handling areas; pigs are clean • **Level of odour around property boundary is checked at least weekly** • **Remove dead pigs from sheds within 12 hours of discovery** • **Flushing sheds twice daily**
Wastewater treatment system (CAD, settlement trenches, clay-lined ponds)	• CAD designed with a cover to capture potentially odorous biogas • Captured biogas is to be directed to a biogas management system that will eliminate odour via a H_2S scrubber and combustion prior to release through an enclosed flare • The wastewater treatment system has sufficient capacity to contain the anticipated effluent volume and the rainfall intercepted during two consecutive wet winters • Regular pond desludging program to ensure sludge does not breach the surface of the clay-lined treatment ponds • Settlement trenches will be taken offline when they reach a minimum freeboard of 500 mm. They will be allowed to dry out and desludged as soon as a spadable consistency is achieved • Prior to desludging, the clay-lined ponds will be	• Effluent loading needs to be even and must not exceed the design capacity of the wastewater treatment system • Pond active volume should be maintained by regular and planned desludging • Desludge when the prevailing wind direction is likely to be away from sensitive neighbours • **Excess pond salinisation should be avoided by the addition of fresh water.** • **Pond pH should be maintained between 6.8 and 8.0.** • Afterbirth, pig carcasses and foreign material should not be disposed of in ponds

Site infrastructure / Control	Operation details (odour controls from applicant)	Guideline requirements/performance measures
	taken offline and allowed to dry out • Prior to the commencement of any desludging activities, a management plan will be provided to the department demonstrating how this will be undertaken while maintaining operations at the site and minimising offsite impacts • During adverse operating conditions, the former clay-lined anaerobic pond will have sufficient capacity to undertake anaerobic treatment of the wastewater.	
Composting bunker	• Cover composting material with a 300 mm thick layer of sawdust • Composting bunkers have a capacity of 855 m^3 to treat 36 tonnes of carcasses every 6 months	• **Placement of dead pigs into composting pile within 24 hours of discovery** • Provide at least 4 m^3 of bay for each tonne of carcasses • Compost always promptly covered with at least 300 mm of sawdust or alternative carbon source • **Composting of high-risk feedstocks (includes carcasses) within 1 km of sensitive receptors must be undertaken in an enclosed structure that is under negative pressure and fitted with fast action doors**

Note: **Bold highlights** indicate controls not met or unsubstantiated to industry standards.

Key Findings:

- The Delegated Officer considers separation distance to be the primary control to mitigate odour emissions impacting on sensitive receptors. The location of infrastructure associated with the primary activities at the premises meets the calculated Level 1.5 S-factor odour separation distance to the nearest residential dwelling with the piggery operating at 7,000 SPU;
- The Delegated Officer notes that the piggery is currently operating at a maximum stocking rate of 8,222 SPU, which is higher than the requested rate of 7,000 SPU. Therefore, a restriction on the maximum stocking rate to 7,000 SPU is likely to reduce the existing risk of unacceptable odour emissions;
- The applicant has completed the construction, installation and operation of several infrastructure upgrades granted under works approval W6292/2019/1 20 December 2019. In addition to the de-sludging works proposed for the facultative and evaporation clay-lined ponds, the risk of odour emissions from the wastewater treatment ponds is anticipated to further decrease to an acceptable level; and
- Existing and proposed applicant controls align with most industry standard controls for odour management; however, odour management could be improved with regular (weekly) monitoring of odours around the premises boundary and implementing timeframes for composting mortalities.

5.3.5 Consequence

The Delegated Officer considers that the proposed authorised maximum stocking rate of 7,000 SPU will not increase the potential strength of odour emissions associated with operating the piggery sheds, wastewater treatment system and composting bunkers given that

the premises is currently operating at a higher throughput level (up to 8,222 SPU).

The Delegated Officer has therefore determined that odour emissions would have a local scale mid-level impact on the amenity of sensitive receptors and considers the consequence of odour emissions to be **Moderate**.

5.3.6 Likelihood

The capture and disposal of biogas from the CAD in addition to the desludging of the clay-lined ponds to remove sludge breaching the waterline will reduce the likelihood of unreasonable odours from these sources during routine operations. Further, the piggery meets the minimum NEGIP Guideline Level 1.5 S-factor odour separation distance (404 m) for the nearest residential dwelling. This calculation indicates that unreasonable odour impacts are less likely to occur if the premises does not exceed 7,000 SPU.

However, the Delegated Officer notes that a high number of odour complaints have been filed from neighbouring residents in 2019, 2020 and 2021, despite the installation of several recent infrastructure upgrades.

Therefore, the Delegated Officer determined the likelihood of unreasonable odours impacting on the amenity of sensitive receptors to be **Possible.**

5.3.7 Overall risk rating

The Delegated Officer has applied the consequence and likelihood ratings described above to the Risk Criteria table in the *Guidance Statement: Risk Assessments* and determined that the overall rating for the risk of unreasonable odour emissions on sensitive receptors is **Medium**.

A medium overall risk rating is acceptable and generally subject to regulatory controls. Regulatory controls considered necessary by the Delegated Officer to lower the risk of unreasonable odour emissions impacting off-site receptors are outlined and justified in Table 5. Given the established proximity of the piggery to sensitive receptors, the Delegated Officer considers that the primary control to mitigate unreasonable odour emissions is a restriction on the operational throughput level (SPU).

6. Decision

The Delegated Officer has reviewed the applicant proposed amendments and considers that operation of the CAD, biogas facility, settlement trenches and compost bunker do not pose an unacceptable risk of impacts to public health and the environment, subject to regulatory controls specified in the revised licence. Further, the Delegated Officer considers that an increase in the authorised maximum stock number to 7,000 SPU does not pose an unacceptable risk of impact to neighbouring residents from unreasonable odour emissions, subject to additional regulatory controls specified in licence L9338/2022/1. This determination is based on the following:

- There are no sensitive receptors within the calculated minimum separation distance between receptors and primary infrastructure to ensure the risk of unreasonable odour impacts is acceptable (determined in accordance with methodology provided in the NEGIP Guidelines for a premises operating at 7,000 SPU);
- The requested stocking rate (7,000 SPU) is lower than the currently operational stocking rate of 8,222 SPU, which is likely to decrease the risk of impacts from odour emissions;
- A review of industry standard infrastructure and operational controls to mitigate potential odour emissions from conventional piggery sheds, wastewater treatment ponds and compost bunkers; and

- A review of historical odour complaints against the premises since 2019, which identified a high number of odour complaints reported by neighbouring residents, indicating that an established odour source-exposure pathway may continue to exist.

The Delegated Officer has imposed the following additional regulatory controls on the revised licence to minimise the risk of impacts to environmental receptors from potential odour and leachate emissions:

- Operational controls, including the daily removal of mortalities from the conventional sheds and placement of those mortalities into the composting bunker facility within 24 hours of discovery;
- Weekly monitoring of odour emissions at the premises boundary;
- Engineering controls to reduce the risk of leachate runoff, including a requirement to drain leachate from the composting bunker to the CAD; and
- Administrative controls, including a requirement to submit a Desludging Plan prior to desludging activities at the premises and the development of an Improvement Plan to demonstrate how the risk of damage from uplift in the below-ground settlement trenches will be managed.

The Delegated Officer is satisfied the above controls, once implemented, will lower the overall risk profile of the premises, and ensure the piggery can operate in a manner that does not pose an unacceptable risk of impacts to public health and the environment. In addition, all other regulatory controls specified in the previous licence for the operation of the premises have been transferred to licence L9338/2022/1.

The Delegated Officer has granted licence L9338/2022/1 for a period of 20 years. In determining the licence duration, consideration was given to *Guidance Statement: Licence Duration* (DER 2015), which describes the departments preference for long-term licenses.

7. Consultation

Table 7 provides a summary of the consultation undertaken by the department during the assessment. The department's response to comments provided by the applicant on 3 March 2022 regarding the draft risk assessment and draft conditions is provided in Appendix 1.

Table 7: Consultation

Assessment	Consultation method	Comments received	Department response
Amendment to Licence L9142/2018/1	Application advertised on the department's website (1/12/2021)	None received	N/A
	Local Government Authority advised of proposal (1/12/2021)	None received	N/A
	14 direct interest stakeholders (local residents) notified and invited to comment (1/12/2021)	Third party A (received 18 December 2021): The submission raises concern that an increased design capacity to 8,222 SPU may lead to worsening odour emissions. The	The Delegated Officer has given due regard to the potential impacts on neighbouring residents from the proposed increase stock number at the premises. The risk assessment considered the potential for increased odour

		submission stated that offensive odours continue to be received at their property.	emissions and proposed controls to mitigate the risk (refer to Section 5.3). It was determined that the risk of odour impact is high and a restriction on operational throughput to 3,121 SPU was necessary to reduce the risk to an acceptable level. The Delegated Officer did not consider that the existing noise profile at the premises would change with the increased stock number.
		Third party B (received 21 December 2021): The submission raises concern about the proposed expansion to 8,222 SPU and the potential for increased noise and odour emissions.	
New licence application	Application advertised on the department's website (6/7/2022)	None received	N/A
	Local Government Authority advised of proposal (6/7/2022)	No comment (received 14 July 2022)	N/A
	Two direct interest stakeholders notified and invited to comment (1/12/2021)	Third party B (received 12 July 2022): The submission raises concerns that odour emissions continue to impact their amenity and health, despite upgrades to wastewater treatment infrastructure.	The Delegated Officer has undertaken an assessment of the risk of unreasonable odour impacts to neighbouring residential dwellings and has determined that the risk is acceptable, subject to additional regulatory controls. The ongoing risk of unreasonable odour emissions will be monitored via new odour monitoring requirements specified in the licence L9338/2022/1.
		The submission queries why clearing activities were not ticked in application form	No clearing is proposed by the applicant in the new licence application.
		The submission notes that some sections in Part 8 and 9 of the application form are missing or incomplete.	The Delegated Officer notes that the new licence application is administrative in nature and proposes no changes to operations or infrastructure at the premises. Further, the Sections in question (applicant history and emissions/discharges) relate to information that the department already has on record and has previously assessed in regulating the premises.

8. Conclusion

This assessment of the risks of activities on the premises has been undertaken with due

consideration of several factors, including the documents and policies specified in this decision report.

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

8.1 Summary of amendments

Table 8 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the revised licence as part of the amendment process.

Table 8: Consolidation of licence conditions in this amendment

Existing condition	Condition summary	Revised licence condition	Conversion notes
N/A	Expiry Date: 15 June 2022	Expiry Date: 15 June 2024	Expiry date extended to align with Planning Approval expiry
N/A	N/A	Condition 1	New condition. Infrastructure and equipment operational requirements (Table 1).
1.1.1 1.1.2	Interpretation and definitions	N/A Interpretation Section, Definitions (Table 5)	Redundant condition. Revised to current licensing format.
1.1.3	Australian or other standard	N/A Interpretation Section	Redundant condition. Revised to current licensing format.
1.1.4	Reference to code of practice	N/A Note (page 3)	Redundant condition. Revised to current licensing format.
1.2.1	Pollution control and monitoring equipment	N/A	Redundant condition. Deleted from licence.
1.2.2	Storage of environmentally hazardous materials	N/A	Redundant condition. Adequately regulated by the Dangerous Goods Safety Act 2004. Deleted from licence.
1.3.1	All wastewaters to be directed to treatment system	Condition 1	Redundant conditions. Adequately covered by shed and pond operational requirements in revised Condition 1. Deleted from licence.
1.3.2 Table 1.3.2	Wastewater storage requirements		
1.3.3	Management of wastewater treatment ponds		
1.3.4 Table 1.3.4	Processing of waste materials disposed on-site	Condition 1	Redundant condition. Adequately covered by composting bunker operational requirements in revised Condition 1. Deleted from licence.
N/A	N/A	Condition 2	New condition. Mortalities management.

Existing condition	Condition summary	Revised licence condition	Conversion notes
N/A	N/A	Condition 3	New condition. Submission of a Desludging Management Plan.
N/A	N/A	Condition 4	New condition. Requirements for on-site storage of sludge.
N/A	N/A	Condition 5	New condition. Weekly odour monitoring.
N/A	N/A	Condition 6	New condition. Monitoring pig numbers on premises.
2.1.1	Groundwater sampling methodology	Condition 8	New numbering and update to wording format
2.1.2	Groundwater sampling frequency	Condition 7 Table 3	Redundant condition. Adequately covered by frequency specified in Table 3, revised Condition 7. Deleted from licence.
2.1.3 2.1.4	Calibration of groundwater sampling equipment	N/A	Redundant condition. Deleted from licence.
2.2.1	Groundwater monitoring parameters	Condition 7	New numbering and update to monitoring frequency requirements.
3.1.1	Records	Condition 11 Condition 12	New numbering and update to wording format
3.1.2	Worker awareness of licence conditions	N/A	Redundant condition. Deleted from licence.
3.1.3	Annual Audit Compliance Report	Condition 10	New numbering and update to wording format
3.1.4	Complaints	Condition 9	New numbering and update to wording format
3.2.1 3.2.2	Annual Environmental Report	Condition 13	New numbering and update to wording format
3.3.1	Notification	NA	Redundant condition. Deleted from licence.
NA	Schedule 1: Premises map	Schedule 1: Premises map	Revised map with odour monitoring points.
NA	Schedule 1: Monitoring bore location map	Schedule 1: Infrastructure map	Revised map with key infrastructure, including groundwater monitoring bore locations.
Schedule 2 Reporting & notifications	Annual Audit Compliance Report Form N1 Notification	N/A	Redundant attachment. Deleted from licence. Forms accessed at www.dwer.wa.gov.au

References

1. Aurora Environmental 2021, Pinjarra Licence Amendment Application for L9142/2018/1, prepared on behalf of Westpork Pty Ltd, submitted to DWER on 21 April 2021.
2. Australian Pork Ltd 2015, *Minimising Odour from Piggeries*, APL Project 2013/031, Australian Pork Limited, Barton, ACT, Australia.
3. Department of Agriculture and Fisheries (Queensland Government) 2013, Managing Odour, Department of Agriculture and Fisheries (QLD) website, accessed 6 January 2022.
4. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
5. Department of Environment Regulation (DER) 2016, *Guidance Statement: Licence Duration*, Perth, Western Australia.
6. Department of Water and Environmental Regulation (DWER) 2019*, Decision Report for Works Approval W6292/2019/1*, Perth, Western Australia.
7. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.
8. Department of Water and Environmental Regulation (DWER) 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.
9. Department of Water and Environmental Regulation (DWER) 2020c, *Guideline: Better Practice Composting* (Draft), Perth, Western Australia.
10. Department of Water (DoW) 2013, *Water Quality Protection Note 27 - Liners for containing pollutants, using engineered soils,* Perth, Western Australia.
11. Tucker, RW 2018, *National Environmental Guidelines for Indoor Piggeries - Third Edition*, APL Project 2015-2221, Australian Pork Limited, Kingston, ACT, Australia.

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
Condition 1, Table 1	Conventional sheds: a) Amend to pulling plugs every 10-14 days (industry practice); and b) should be deleted or changed to allow for cleaning sheds in rotation.	Requirement "a" amended to flushing of underfloor pits and connected drainage channels at least once per week in accordance with best practice (APL 2018). Requirement "b" amended to ensure the floors are cleaned between each batch of pigs.
	Covered anaerobic pond: c) should be deleted as a safety valve is required to allow venting in the event the gas pressures build up to a dangerous level.	Amended to allow opening of the safety valve to vent gas in the event of gas pressure reaching a dangerous level. This exemption is unlikely to change the risk profile of odour emissions given the release of gas will be temporary and infrequent.
	Settlement Trenches: d) This condition should be altered to read "Cease using the operational trench when the sludge is at the minimum 500 mm freeboard mark; and h) "Sludge must not protrude above water surface" This defeats the purpose of the trenches which is to trap and dry sludge. It is requested that this requirement is deleted.	Requirement "d" amended to capture water or sludge ("contents"). Requirement "h" amended to state that sludge must not protrude above the water surface in the *operational* trench. The Delegated Officer considers this to be a key odour control for all operational, uncovered wastewater containment infrastructure, given exposed sludge is a likely source of odour emissions.
	The interconnected clay lined treatment ponds: These are set to operate in a manner that maintains a freeboard of 500 mm. Westpork requests that the licence permits the use of the three HPDE lined ponds in case of an emergency or if one clay lined pond is taken offline for desludging.	The three high-density polyethylene (HDPE)-lined evaporation ponds were not constructed in accordance with works approval W5687/2014/1 (see Section 2.4 of this report and Decision Report for W6292/2019 previously issued to the applicant). Therefore, the use of these ponds for the containment of treated wastewater was not assessed in this report. Given the HDPE-lined ponds have been constructed, the Delegated Officer advises that the licence holder may submit a licence amendment application to request authorisation to operate the ponds and demonstrate the ponds are fit for purpose.

Condition	Summary of applicant's comment	Department's response
	Composting bunker: c) The design of the compost bunker is such that little or no leachate is generated as any liquids are absorbed by the composting material. It is suggested that the requirement is amended to read: "The compost facility shall be designed an operated such that any leachate is retained within the compost and within the bunded area. Should excess leachate be created it should be collected and directed to the covered anaerobic digester"	The Delegated Officer notes that best practice is to drain leachate to a sump to avoid oversaturation of the composting material, especially in winter. Oversaturation creates anaerobic conditions, an impediment to composting and odour risk. Requirement added for compost to be damp but not sodden, which is consistent with other licenced piggeries in the region. Removed requirement specifying that leachate must be conveyed to the wastewater treatment ponds.
	Biogas management system: a) should be amended to say biogas from the covered anaerobic digester must be combusted either in the heat and power recovery system or in the flare prior to being discharged to atmosphere while noting the system incorporates an emergency release valve in the event of overpressure that can vent directly to atmosphere in an emergency.	Amended to permit release of gas directly to atmosphere in circumstances where overpressure in the system must be reduced via the emergency release valve. The release of gas in emergency circumstances is unlikely to change the risk profile of odour emissions given the release of gas will be temporary and infrequent.
	Sludge Drying: This infrastructure is redundant and has been decommissioned. Item 7 should be deleted.	The Delegated Officer agrees and has removed the sludge drying bed from the table. Requirement added (Condition 3) to ensure any sludge excavated from the wastewater treatment system that is to be stored on-site prior to disposal is stored on a bunded area designed to prevent leachate from discharging to ground.
Condition 3	Request that this requirement is deleted given it is not required at other sites operated by the applicant. The requirement to address mitigation measures to avoid damaging the clay liners is not required given Westpork's extensive experience with desludging of such ponds means that there is no danger of damaging the liner. There should be no need to submit a desludging management plan when desludging the settlement trenches since these are dedicated facilities aimed at trapping and drying sludge and therefore it is highly unlikely that they will result in environmental impacts or odours.	This is a licence holder proposed control (see Section 2.7 in the application supporting document [Aurora 2021]) that the Delegated Officer considers necessary to demonstrate how potential odour impacts will be mitigated during de-sludging events in clay-lined ponds 2 and 3. Site-specific factors have been considered in determining the risk of odour impacts, including separation distance to the nearest receptor. The requirement to detail a revised water balance and how the clay liners will be protected during desludging are kept to ensure the risk is adequately monitored and are not considered an onerous task.
Condition 4	Condition not required as the trenches are constructed above ground level and not subject to hydrostatic uplift as a result. The trenches were	A site inspection on 28 June 2022 confirmed that the settlement trenches were constructed with a base at or above

Condition	Summary of applicant's comment	Department's response
	designed by civil engineers and passed compliance tests. Notwithstanding, Westpork arranged for the installing civil contractor to rework the clay liners to provide even greater integrity and installed a sacrificial HDPE liner that will be replaced between cleanout events.	ground level. The clay-liner has also been reworked to be compliant with works approval W6292/2019/1. The Delegated Officer therefore agrees that the risk of seepage to groundwater causing contamination and down-gradient impacts to receptors is acceptable, subject to operational and monitoring controls set in the licence. The requirement for an improvement plan has been removed.
Condition 6, Table 2	The reporting requirements are an administrative burden while providing limited or no environmental benefits. As a result, Westpork requests that the following reporting items are removed from the condition: a) Pigs received at the premises b) Pigs taken off the premises c) Pig Mortalities composted on the premises	The Delegated Officer agrees that the key figure to be reported is the maximum number of SPU held at the premises in each month and has removed the requirements to record pigs received and taken off the premises. Mortalities are to be recorded monthly, with this data to be made available upon request.
Condition 7	It is not possible to measure SWL in MB1 as this is the production water bore. MB3 shallow and deep are not present on site and have not been since taking ownership in April 2019. This should be reflected in the monitoring condition. Westpork also request that the monitoring frequency is set to twice per year with not less than 5 months between any sampling. 6 monthly as per all other licences.	Amended to remove requirement to measure standing water level in bore MB1. Amended to remove bore MB3 from list of monitoring bores. The Delegated Officer amended the specified groundwater sampling frequency to six-monthly in alignment with the licence holder's other premises. Sampling events must be separated by at least five months.