Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for licence

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

Licence number	L9435/2024/1
Applicant	Cuballing Farms Pty Ltd
DWER file number	DER2024/000162
Premises	'Cuballing Pork' 4327 Williams-Kondinin Road WARDERING WA 6311
Date of report	12 August 2024
Status of report	Final

1. Purpose and scope of assessment

Cuballing Farms Pty Ltd (the applicant) is seeking a licence for its existing piggery near Narrogin and submitted an application under Division 3 Part V of the *Environmental Protection Act 1986* (EP Act) on 17 April 2024.

This report sets out the department's assessment of risk events arising from emissions and discharges that are generated from existing piggery operations at the premises.

In completing the assessment documented in this report, the department has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2. Application details

Overview of existing premises

'Cuballing Pork' is an existing intensive piggery that was established in the late-1970s in the rural locality of Wardering, about 14 km north-east of Narrogin.

The premises currently comprises a mixed indoor piggery (conventional sheds and deep litter shelters) with a combined design capacity of 2,887 standard pig units (SPUs). The piggery is certified under the Australian Pork industry-sponsored quality assurance program (APIQ), which requires the operator to have in place all relevant state and local government approvals to operate.

Table 1 describes the prescribed premises category the application is subject, as defined in Schedule 1 of the Environmental Protection Regulations 1987.

Table 1: Prescribed premises category

Classification of premises	Assessed design capacity (as per application)
Category 2: Intensive piggery: premises on which pigs are fed, watered and housed in pens.	Not more than 4,216 animals (2,887 SPUs equivalent)

Background

The applicant has operated the piggery since 1993 and has undertaken expansion works since this time, which have not been subject to a works approval, or planning approvals issued by the Shire of Cuballing (shire).

The applicant sought, and was granted, retrospective planning approval in July 2016 for operations at that time (550 breeding sows), including further expansion works to more than double capacity; further retrospective planning approval was granted in June 2024 to reflect additional shelters that had already been established, as well as further expansion works, consistent with this licence application (4,216 animals).

Existing piggery design and operation

The piggery comprises a 1,200-sow breeder operation, in which animals are mated, bred and farrow within conventional indoor sheds. Piglets are weaned at three weeks of age and removed directly off-site on the day of weaning to a nearby grow-out facility at a rate of about 620 weaners per week, or 32,240 weaners per year. Following weaning, dry sows are remated and transferred to deep litter shelters where they stay for the remainder of their next gestation.

There are currently four conventional indoor sheds – the original dry sow shed and the original farrowing shed – both constructed in the 1970s; a second, modern farrowing shed that was progressively constructed between 2001 and 2010 (72 crates); and a third, modern farrowing shed that was constructed between 2018 and 2021 (96 crates). A fourth, modern farrowing shed (48 crates) has recently been constructed and will replace the original farrowing shed (21

crates), which will be decommissioned.

There are also 17 deep litter shelters that each comprise a hooped structure with a tarpaulin roof over a concrete base and half walls, with barley straw used for bedding:

- 13 large shelters (24 x 10 m);
- 2 small shelters (12 x 6 m); and
- 1 quarantine shelter (23 x 8 m).

Twelve of the large shelters are used for keeping gestating sows and replacement sows (growers) and thirteenth is for keeping gilts and growers; the quarantine shelter is used for isolating incoming growers (located about 600 m south-east of the pig sheds). The two small shelters are used for keeping 'out of specification' weaners that cannot be sold directly at weaning.

Up to 80 sows are kept in each of the large shelters; up to 60 gilts and 60 growers are kept in the gilt shelter; and up to 240 growers are kept in the quarantine shelter. Up to 75 weaners are kept in each of the small shelters.

Herd size and housing

Table 2: Existing piggery – herd size and housing

Pig class	SPU factor	Pig numbers	SPUs	Housing
Gilt (100 – 160 kg)	1.8	60	108	Conventional
Boar (100 – 300 kg)	1.6	10	16	Deep litter
Dry sow (160 – 230 kg)	1.6	1,000	1,600	Deep litter
Lactating sow (160 – 230 kg)	2.5	216	540	Conventional
Sucker (1.4 – 8 kg)	0.1	2,480	248	Conventional
Weaner (8 – 25 kg)	0.5	150	75	Deep litter
Grower (25 – 55 kg)	1.0	300	300	Deep litter
Total		**4,216**	**2,887**	

Effluent management

All sheds comprise slatted flooring over concrete under-floor drains. The two original sheds are located directly adjacent to the original pond system, in which the under-floor drains are directly connected to via an open trench. The second modern farrowing shed (completed 2010), which is located separate to the original sheds, comprises a pull-plug flushing system in which effluent flushed via gravity through a PVC pipe to the original pond system.

The original pond system comprises a holding pond that was constructed in the 1970s by the original owner; a primary pond/trench and a second holding pond were later constructed by the applicant in the late-1990s (there are no details on the design and construction standard available for these ponds).

The third modern farrowing shed also comprises a pull-plug flushing system; however, effluent is firstly flushed to an underground fiberglass tank, from which it is manually pumped to a separate holding pond that was constructed by the applicant in 2021 and has a storage capacity of about 6,000 m^3. An identical second pond, also constructed in 2021, provides additional storage capacity, though it has not yet been required.

Although the second and third modern sheds and new ponds were constructed without a works approval, the design and construction details are available and indicate they are fit-for-purpose.

There is no primary screening in place within either pond system – solids are simply left to settle within each pond. Wastewater disposal has historically been via evaporation; however, over the past 12 months, the applicant has been using effluent for maintaining moisture levels

within composting windrows (see below).

Solid waste management

Spent bedding is removed the shelters about every two to three weeks after each rotation. Previously, this material was stockpiled directly on the ground on an area adjacent to the piggery and later spread over arable land (unclear whether this was applied at sustainable rates); however, for the past 18 months, this material has been stockpiled in a paddock to the north of the piggery, where it is formed into windrows and processed into compost using a tractor-drawn compost turner (all the composting is done by a neighbour, who leases surrounding properties). The neighbour then removes finished compost material from the premises and spreads on neighbouring cropping land as a soil ameliorant.

Dead pigs, stillborn piglets, and afterbirth are currently encapsulated in straw bunding on the ground and are semi-decomposed, prior to spreading on arable land on the premises.

The new holding pond has not yet required desludging; the original trench was last desludged in 2016 where the removed sludge was stockpiled directly on the ground and allowed to dry, prior to being spread on arable land.

Animal feed manufacturing

Rations are prepared on the premises using a tractor-driven portable hammermill, with associated commodity storage, handling and ration delivery infrastructure. The capacity of the hammermill is 3.0 t/hr, which operates for an average of five hours per week.

Grains, such as lupins, barley and wheat, are delivered to the premises and stored in silos. Additives, such as meatmeal, bloodmeal, and vitamins/mineral pre-mix come in 25 kg bags and are stored within a large mixing shed on the premises. Canola oil is stored in 1,000 L bulk containers.

Rations are milled and mixed in 2.8 t batches, with about 1,600 t/yr produced for current operations. Rations are transferred, as mash, to silos in the piggery using the portable hammermill.

Proposed improvements

Effluent management

The applicant proposes to decommission the two original holding ponds and divert influent from all four sheds to the new pond. The existing trench will be retained for initial storage of influent from the original dry sow shed and second and third modern sheds, prior to it being diverted (pumped) to the new pond.

PigBal calculations indicate the four sheds combined generate about 12 kL/day of effluent and about 300 kg/day of volatile solids; to manage the expected volumes of influent about 4,535 m^3 of storage capacity is required – which is about 80% of the new pond (6,000 m^3) – this also assumes the pond is desludged every 7 years.

The original ponds will be drained and allowed to dry out over at least two summers, after which the dried solids will be removed (and composted) and the ponds backfilled.

Compost pad

The applicant proposes to construct an impermeable, bunded hardstand pad for the composting of spent bedding and mortalities. This will ensure the protection of any groundwater resources and ensure all surface runoff is contained and is consistent with the environmental protection standards under the NEGIP

The pad will measure 100 x 70 m (7,000 m^2) and comprise a 300 mm high clay bunding on three sides. The applicant is currently investigating whether compacting the in-situ soils (sandy clay with gravel) will be able to achieve an acceptable compaction and permeability standard (yet to be confirmed); otherwise, the pad must be constructed with a minimum 300 mm thick compacted clay liner (CCL) using site-won materials that have been laboratory

tested to indicate a hydraulic conductivity in the order of 10^{-9} m/s (2 x 150 mm layers), overlain by a 150 mm thick gravel working layer.

The pad will also be constructed with a clay-lined runoff pond at its lowest point. The applicant has determined the storage capacity required to contain the estimated runoff from a 1% annual exceedance probability event (equivalent to 1:100 year ARI) is 5,081 m^3 – the pond will measure 100 x 44 x 2.3 m deep, which equates to a storage capacity of about 4,048 m^3 (including a 300 mm freeboard).

Compost management

Once constructed, all composting operations will be conducted on the bunded hardstand pad.

PigBal calculations indicate the piggery generates:

- about 300 dry tonnes per year of spent bedding material, or about 600 wet tonnes (assuming 50% average moisture content), which equates to about 745 m^3/yr (assumed bulk density 0.8 t/m^3). Spent bedding will be routinely added to the main compost windrows, at a rate of about 35 m^3 every two to three weeks;
- about 16 tonnes per year of mortalities carcasses, or about 16 m^3 based on a typical water content of the decaying carcasses being in the order of 90%. Larger carcasses will be split (to release gases that accumulate in the abdomen during decomposition and to increase the rate of composition). Carcasses, stillborn piglets, and afterbirth will continue to be covered in spent bedding and left undisturbed in separate windrows for about three months, prior to being incorporated into the main compost windrows for processing into a final composted product; and
- about 1,280 m^3 of sludge, removed from the ponds every 7 years. Sludge will be pumped via a temporary pipeline onto the hardstand pad where it will be contained within earthen bunkers and left to dry until its moisture content reduces to about 50%, before being incorporated into the main compost windrows.

The total mass expected to be composted annually is about 610 tonnes/760 m^3, which will all be conducted on the hardstand pad. With 7,000 m^2 available, the applicant considers this to be sufficient to hold at least 12 months of composting activities. The total mass of compost produced annually will be about 430 tonnes/170 m^3 per year of finished product (assumed bulk density 0.4 t/m^3).

The applicant does not conduct any cropping on the premises; therefore, 100% of finished compost will be removed from the premises by the neighbour (i.e., no on-site spreading).

Exclusions to this assessment

The following matters are out of the scope of this assessment and have not been considered within the risk assessment detailed in this report:

- other general farming activities being conducted on the premises that are not related to operation of the piggery;
- vehicle (i.e., livestock truck) movements on private or public roads; and
- land use zoning and compatibility with surrounding land uses.

3. Location and siting

Siting context

The premises is located on farming land north-east of Narrogin, about 175 km south-east of Perth. It is located in the Upper Murray River catchment, which has been largely cleared of native vegetation for crop and pasture production in dryland agricultural systems.

The piggery is located within Lot 4151, with the main access off Williams-Kondinin Rd. This land title has a total area of 27 ha, on which all existing and proposed piggery infrastructure and activities are located, except the quarantine shelter, which is about 600 m south-east on

Lot 4152. The applicant also owns adjacent lots, which are leased by a neighbour and have previously been used for spreading piggery wastes, along with other neighbouring properties.

Land use and sensitive receptors

About half of Lot 4151 has been cleared and comprises the piggery infrastructure and planted oil mallees, with the other half comprising an isolated block of remnant vegetation that has been mapped as the nationally recognised threatened ecological community (TEC) – the Eucalypt Woodlands of the WA Wheatbelt (Eucalypt Woodlands TEC), which is listed as critically endangered under federal environmental protection laws (*Environment Protection and Biodiversity Conservation Act 2016*). This vegetation is fenced off from the piggery; stockpiles of piggery wastes are immediately adjacent.

There are six rural dwellings within 3 km radius of the piggery, with two upwind from the prevailing south-westerly and south-easterly winds. The nearest towns are Cuballing (12 km north-west) and Narrogin (14.5 km south-west).

Climate

Cuballing experiences a Mediterranean climate, with warm dry summers and cool wet winters. Long term average rainfall is 500 mm; however, post-1975, average rainfall has dropped to 450 mm.

There has been a shift in rainfall patterns away from lead-in autumn rainfall in April and May, followed by three months of soaking winter rainfall (June-August) with follow up rainfall in September, to a shorter rainy season with an increased chance of more intense rainfall events that result in large volumes of runoff and flooding.

Soils and landscape

Soil landscape mapping (DPIRD 2021) indicates the premises and surrounds lie mostly within the Biberkine subsystem (Narrogin) Soil-landscape Zone. This system is described as 'Valley floor suspended by the gentle slopes of Noombling unit; soils include deep yellow sandy duplexes and a narrow, lower, sandy terrace'.

Groundwater

There are no WIN groundwater sites or licensed draw points on, or within proximity to, the premises; however, it lies within the mapped bounds of an ancient river system (also known as a palaeochannel) – it is therefore possible the piggery overlies a palaeodrainage.

Palaeochannels are geologically ancient, buried river valleys which no longer function as active surface water systems, and although surface water no longer flows within these systems, the sediment which has filled the river channels commonly forms aquifer systems that are capable of storing significant quantities of groundwater.

Groundwater salinity in the palaeochannels east of Narrogin ranges from 30 g/L (seawater is 34 g/L) in the west before increasing down-gradient to exceed 230 g/L in the east around Newdegate. The increase in salinity is typically related to groundwater discharge from salt lakes.

Surface water

The Darring Brook runs adjacent, about 300 m east of the piggery; this brook is a major tributary of the Hotham River, which has been assessed as part of the department's Healthy Rivers Program as having poor water quality (particularly eutrophication, secondary salinisation, low dissolved oxygen and contaminants) resulting from extensive clearing for agriculture and uncontrolled livestock access within riparian zones.

A minor ephemeral tributary of the Darring Brook runs just south of the piggery, less than 20 m from the older pond system.

Separation distances

The applicant has calculated the minimum separation distances to nearby sensitive receptors

using a readily applied formula (the 's-factor' formula) outlined in the NEGIP.

The s-factor method was originally devised in Queensland and allows for a rapid and simple assessment of potential air quality impacts (mainly odour) that does not require technically specialised and complex air quality modelling.

When considering the overall capacity of the existing conventional sheds and deep litter shelters, and the proposed additional infrastructure (2,887 SPUs), the calculated separation distance to the nearest receptor, being a single rural or farm dwelling, is 310 m, which is within the actual distance of 1,070 m. The calculated separation distance to the nearest town, being the medium-sized town of Cuballing (~600 persons), is 5.26 km, which also is well within the actual distance of about 11 km.

4. Industry guidelines

The *National Environmental Guidelines for Indoor Piggeries* (NEGIP) (Australian Pork Ltd 2018) provides a general framework for managing the environmental issues associated with indoor piggeries in Australia.

The criteria outlined in Appendix A of the NEGIP has been used as a baseline for rating the vulnerability of major natural resources from the existing piggery operations and the risk of environmental impacts from the existing design and operational features.

Table 4 provides an indication of the risk of the existing piggery using the NEGIP criteria, where 1 is low risk and 4 is high risk (note: this has been used to inform, and does not constitute, the department's risk assessment, which is in section 7).

Table 4: Summary of Cuballing Pork against NEGIP criteria

NEGIP aspect	Risk criteria	Risk rating
Amenity and natural resources vulnerability		
Soils of reuse areas	Piggery waste will be composted and sold off-site (no on-site reuse)	N/A
Groundwater quality and availability	Depth to groundwater is always at least 10 m below the ground surface or the base of any piggery infrastructure	2
	Groundwater is not used in the piggery	N/A
Surface water quality and availability	The piggery is located within 100 m of the closest watercourse	4
	The piggery is located at least 800 m from the closest major water supply storage	1
	Piggery wastes will not be reused on the premises	N/A
	The piggery is located above the 1:100 year flood line	1
	Surface water is not used in the piggery	N/A
Community amenity	The piggery has received no complaints from the public or regulators for at least five years	1
	Levels of odour, dust and noise around the property boundary area not routinely monitored	4
	Surrounding land is all designated rural and is not designated for future development or rezoning	1
	The piggery is fairly well concealed from roads and neighbours	2
	Vehicle movements and other noisy activities occur only during the day, except under exceptional circumstances	1
	Mechanical equipment used on-farm is generally fitted with manufacturer specified exhaust devices	2
	Dust from traffic movements, manure handling and reuse and feed milling is not specifically controlled but dust does not	2

	seem to cause nuisance	
	A complaints management procedure is in place, but does not include complaints recording, investigation and corrective action, along with appropriate consultation	2
	Mediation would be used to try to settle disputes with neighbours	1
Protection provided by design and management		
Pig housing	Two of the four conventional sheds are oriented east-west and are constructed to maintain temperatures within the required range with minimal mechanical heating or cooling	2
	The deep litter sheds are oriented east-west and constructed to maintain temperatures within the required range with no mechanical heating or cooling	1
	The bases are concreted for both the conventional sheds and deep litter shelters	1
	Feeding systems rarely allow feed to be visible on the floor or in the bedding near the feeders	2
	Naturally ventilated sheds are well ventilated, as they are separated by a distance of at least 5 times their height	1
	Stocking densities meet the requirements of the *Model Code of Practice for the Welfare of Animals: Pigs*	1
	The conventional sheds are regularly cleaned to maintain very clean lanes, pens and handling areas: pigs are generally clean	2
	The bedding in the deep litter shelters are mostly kept dry and friable; pigs are generally clean	2
	The inflow or outflow of effluent from conventional sheds is prevented by controls	1
	Water is not used to washdown deep litter housing after spent bedding removal	Absent
Nutrient content of manure	Nutrients in effluent and manure are not generally measured or estimated, as there is no on-site re-use	N/A
Effluent collection system	Stormwater runoff, including roof runoff is excluded from entering the effluent collection system	1
	Effluent collection systems (e.g. channels, drains, pipes and sumps) for conventional sheds are impervious (no significant cracks)	1
	Effluent pits, sumps, pipes and drains are sized and managed so that they do not spill	1
	Effluent pits and drains are not self-cleaning, but are cleaned at least weekly to remove manure solids	2
	There are no specific contingency measures to prevent spills from the system	4
	Flushing channels are flushed at least twice a week, and pull plugs are emptied at least once every 4 weeks	3
	Drains, pits and sumps are inspected at least monthly for solids accumulation, leakage and deterioration	3
Effluent pre-treatment system	There is no effluent pre-treatment system in place – all solids are flushed to the anaerobic trench	Absent
Effluent treatment	The effluent treatment system:	

system (older sheds)	• does not capture, effectively treat, or store all effluent produced by the piggery	4
	• sometimes produces strong odours, but these don't generally impact beyond the property boundary	3
	• is designed to store at least 5 years sludge	2
	• is not lined with well compacted clay or a well-maintained impervious synthetic liner (construction details unknown)	4
	• is designed for an overtopping frequency not exceeding 1 in 20 years where effluent disposal is by evaporation	1
	The depth to the water table from the base of the effluent treatment system is at least 2 m	1
Effluent treatment system (new shed)	The effluent treatment system:	
	• is designed to capture, treat, store and reuse all effluent. It has no significant isolated sections. Inlets and outlets are positioned to prevent short-circuiting	1
	• is designed and managed such that odour emissions are generally acceptably low	2
	• is designed to store at least 5 years sludge	2
	• has a design permeability of 1 x 10^{-9} m/s for a depth of at least 300 mm of compacted clay for ponds up to 2 m deep	1
	• is designed for an overtopping frequency not exceeding 1 in 20 years where effluent disposal is by evaporation	1
Solid waste storage	Solid waste storage areas are not within a controlled drainage area	4
	The base of solid waste storage areas are not built from well compacted clay or other low permeability material	4
	The depth to water tables beneath the base of manure storage areas exceeds 2 m at all times	1
	Stockpiles are generally managed to maintain low odour emissions	2
Mortalities management	Dead pigs are almost always removed from the sheds or pens daily	2
	Mortalities management always occurs within 36 hours of death	2
	Mortalities management is by composting	1
	Mortalities management areas always provide at least 2 m depth between base level and groundwater	1
	Mortalities are always promptly covered with at least 300 mm of spent bedding and continuously kept covered	1
	Mortalities management does not occur within a controlled drainage area	4
	In the case of a mass mortalities event, there is a suitable site selected but no real plan for managing mass mortalities	3
Reuse areas	Not applicable – piggery waste will be composted and sold off-site (no on-site reuse)	N/A

Comparison with the NEGIP

Siting and design

- The existing piggery is sited on priority agricultural land and is well separated from populated areas. Its location in a climate with high annual moisture deficit (i.e., low rainfall and high evaporation) further reduces the risk of common environmental issues associated with wet conditions, such as managing effluent and manure during the wetter months.
- There are several receptors (rural dwellings) within proximity to the piggery, including two that are upwind of the prevailing south-westerly winds; however, there is no recorded history of nuisance odour complaints according to the shire;
- Key piggery infrastructure is located less than 20 m from a minor ephemeral watercourse, which flows into a tributary of the Darring Brook. Minimising the potential for surface runoff and groundwater interaction from ongoing piggery operations is therefore critical.
- Key piggery infrastructure adjoins an isolated block of remnant vegetation that comprises the critically endangered Eucalypt Woodlands TEC. Protection of this vegetation complex from ongoing piggery operations is also critical.
- The design and operation of the conventional piggery sheds appears to be consistent with the NEGIP from an animal welfare standard, in terms of stocking densities, ventilation and general animal cleanliness and husbandry. However, the design and construction standard of the original ponds is unclear as they were constructed by the previous owner; PigBal calculations indicate the volumes of effluent generated by the sheds exceeds the capacity of this pond system; however, the applicant has constructed additional ponds to further increase the site's storage capacity.
- The design and operation of the deep litter shelters appears to be consistent with the NEGIP, with exception of the shelters not being washed out after spent bedding is removed, which accounts for the lack of containment infrastructure for managing wash water.
- The design, construction standard and operation of the new pond appears to be consistent with the NEGIP.

Waste management

- Spent bedding and mortalities composting currently does not meet the environmental protection standards under the NEGIP, as the area does not comprise an impermeable, bunded hardstand area. Processing dead animals by composting is the most preferred option under the NEGIP for managing mortalities.
- The proposal to construct an impermeable, bunded hardstand area for composting operations, including a runoff containment pond, will ensure this aspect of the piggery operation meets the environmental protection standards under the NEGIP.
- The proposal to properly compost all piggery wastes is the most preferred option under the NEGIP and, if done correctly, produces a stablised material that poses a low risk of odour and to public health. The proposal to remove all finished composted material from site further reduces the risk profile of the premises (compared to spreading this material on the premises), which may be done without the need for additional approvals.
- The management of effluent via a closed loop system (evaporation and adding to compost windrows) is also preferred and further reduces the risk profile of the premises (compared to on-site disposal via irrigation).

5. Other approvals

Planning approvals

A conditional retrospective development approval for an intensive piggery was issued by the Shire of Cuballing in July 2016. The approval included an expansion proposal for construction

of an additional four deep litter shelters, an additional conventional shed, a new holding pond, and an increase in pig numbers from 1,173 to 2,561 SPUs.

The shire also issued a further retrospective development approval in June 2024, for an additional conventional shed (which is mostly constructed) and a deep litter shelter, a compost hardstand pad and associated runoff containment pond, and a further increase in pig numbers to 2,887 SPUs (consistent with this licence application).

6. Consultation

The application was referred to relevant public authorities and advertised for public comment on the department's website during May 2024.

Public authorities

DPIRD reviewed the application, and considers the piggery has largely been built in accordance with the NEGIP, with the following exceptions:

- all waste containment infrastructure in controlled drainage areas should be constructed to achieve a permeability of $<1x10^{-9}$ m/s, which is typically comprised of 2 x 150 mm thick layers of clay. It is unclear whether the trench achieves this permeability; additionally, it appears the proposed compost hardstand will be constructed with one 150 mm clay layer and one 150 mm gravel layer (instead of 2 x clay layers);
- the capacity of the proposed evaporation pond for the compost hardstand is much greater than that required based on the calculations conducted by DPIRD; and
- a 2-metre separation to groundwater for all waste containment infrastructure is recommended, regardless of the time of year – based on information provided with the application, DPIRD considers this separation appears to have been achieved.

The shire confirmed it has issued retrospective planning approval (see above) and is unaware of any specific environmental issues relating to the existing piggery operation.

Public submissions

No submissions were received during the advertised public comment period.

7. Risk assessment

Determination of emission, pathway and receptor

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 2020). 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.

Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account identified potential source-pathway and receptor linkages. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls, 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 the below table.

Risk assessment table

The table below describes the risk events associated with the proposal consistent with the *Guideline: Risk Assessments* (DWER 2020a). The table identifies whether the risk events are acceptable and tolerated, or unacceptable and not tolerated, and the appropriate treatment and degree of regulatory control, where required.

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls
Source/ Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
Category 2: Intensive piggery								
Holding, feeding and watering of animals within **conventional sheds**	Nutrient-laden effluent (spilt feed, water, urine, faeces), accumulated in sheds	Seepage/infiltration, causing contamination of soils, groundwater	The original conventional sheds comprise a concrete base from which effluent is flushed to an anaerobic "trench" that overflows to two evaporation ponds The design and construction standard of the original ponds are unknown	Mid level on-site impacts **Moderate**	Is possibly occurring **Possible**	**Medium** Acceptable, subject to regulatory controls	Solid concrete under-floors for conventional sheds are consistent with the environmental protection standards under the NEGIP, including the management of effluent using a pond system that is designed for evaporation. The delegated officer notes and supports the applicant's plans to decommission the two older holding ponds, and instead divert all effluent to the new storage pond. It is also noted the applicant's plans to keep the existing trench in service as an intermediate holding sump for the original dry sow shed and first and second farrowing sheds, mainly due to the existing setup and configuration of infrastructure to manage the effluent from those sheds. However, as the design and construction standard of the original ponds is unknown (construction material, compaction, permeability, etc.), ongoing use of the trench may present a high risk of impacts to groundwater – if present – given the sandy clay soils of the area (there are no groundwater wells on the premises to determine the level of impacts). Additional information is required in order to determine the geology in which the trench is located, the presence/absence of groundwater, and whether the trench is fit for purpose to continue to be used for storage of raw effluent – this has been added to the licence as a specified action to be taken. Should the results indicate the trench is not fit for purpose, it will either need to be relined, a new pond constructed, or a suitable alternative put forward for the department's assessment.	- Infrastructure design and operational requirements specified in infrastructure table - All infrastructure must be maintained to ensure integrity is sustained - Original holding ponds and fiberglass tank must be decommissioned - Drilling to be conducted within proximity to the trench, and results submitted to the CEO to inform risk of ongoing operation
			The fourth modern farrowing shed has been constructed with slatted flooring and underfloor pull-plug flushing system Effluent is flushed and pumped to the new holding pond via PVC pipe	Low level on-site impacts **Minor**	Will probably not occur in most circumstances **Unlikely**	**Medium** Acceptable, subject to regulatory controls	Slatted flooring and concrete underfloor pits with pull-plug flushing systems are consistent with the NEGIP, including the management of effluent using lined holding ponds that are designed for evaporation. Although the fourth modern farrowing shed and new ponds were not subject to a works approval, information provided by the applicant indicates the design and construction standard to be consistent with the NEGIP. It is noted that since being constructed in 2021, vegetation (trees) have started growing within the side walls of the ponds, which poses a high risk of impacting the ongoing integrity of the walls. Conditions have therefore been added to require the removal of this vegetation and ensure the walls are maintained without vegetation. Providing the shed and ponds are managed according to the NEGIP, the risk of impacts to groundwater from this infrastructure appears to be acceptable.	- Infrastructure design and operational requirements specified in infrastructure table - Vegetation growing within the pond walls must be removed - Pond walls must be maintained as free of vegetation
		Overtopping of original ponds, runoff causing impacts to health of immediately adjacent watercourse (Darring Brook tributary)	Monitoring of effluent levels Proposal to decommission the original holding ponds	Mid level on-site impacts **Moderate**	Could occur at some time **Possible**	**Medium** Acceptable, subject to regulatory controls	Based on the volume of influent from all 4 sheds, PigBal calculations indicate the original ponds are not sufficiently sized to contain the volumes of effluent generated, without careful management and regular monitoring to ensure adequate freeboard is being maintained at all times. The delegated officer supports the applicant's plans to decommission the two older holding ponds and will condition this requirement in the licence. It is noted the applicant's plans to use the existing trench as an intermediate sump for effluent before transfer to the new holding pond; assuming the trench is fit for purpose (see above), conditions have been added to require frequent inspections of the trench and its surrounds, to provide assurance over their ongoing integrity.	- Original holding ponds must be decommissioned - Freeboard requirements on existing trench - Frequent inspections of the trench and surrounds

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls
Source/ Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
		Overtopping of new holding ponds, runoff causing impacts to health of immediately adjacent watercourse (Darring Brook tributary)	Ponds are designed with sufficient storage capacity, accounting for 7-yearly desludging Ponds are sufficiently sized to contain the volumes of effluent generated by all sheds Effluent is used as part of the composting process	Short-term impact to an area of high conservation value **Major**	Will probably not occur in most circumstances **Unlikely**	**Medium** Acceptable, subject to regulatory controls	Based on the volume of influent from the 4 existing sheds and the proposed new farrowing shed (4,535 kL/yr) and an available storage capacity of 2 x 6,000 m^3 ponds (in addition to the trench 1,600 m^3), the delegated officer is satisfied there is sufficient storage capacity to contain the volumes of influent from the existing and proposed shed, under normal operating conditions. Also noting that most of the contained effluent will be used up in the composting process or evaporated. The delegated officer is mindful of the new ponds being located in proximity to a critically endangered TEC and a watercourse, and that impacts to the health of these systems may result in the event of a pond spill or significant seepage over time. Conditions have therefore been added to require frequent inspections of the ponds and surrounds, to provide assurance over their ongoing integrity.	- Infrastructure design and construction requirements specified in infrastructure works table - Freeboard requirements on ponds - Frequent inspections of the ponds and surrounds
	Odour, from effluent accumulated in conventional shed underfloor pits and effluent holding ponds	Unreasonable interference with the health, welfare, convenience, comfort and amenity of nearby sensitive receptors (6 within 3 km radius)	Farrowing shed flushed once every 5 weeks Pull-plug system flushed once a week Ponds are desludged every 7 years	Low level off-site impacts to amenity **Minor**	Could occur at some time **Possible**	**Medium** Acceptable, subject to regulatory controls	The NEGIP recommends fixed separation distances of at least 250 m to rural dwellings and 750 m to a townsite. The closest rural dwelling is about 1.1 km west of the piggery and five others within a 3 km radius. The nearest small town of Cuballing is about 12 km to the west. There is no recorded history of nuisance odour complaints according to the Shire of Cuballing from historical operations at this site; however, this alone is not an indicator that odour is not an issue. Providing the effluent collection system is managed according to NEGIP recommendations (i.e., frequent flushing, solids separation, daily visual checks for blockages, ponds desludged when required, etc.), and considering the lack of odour complaints from historical operations, the ongoing risk of off-site odour impacts from current operations appears to be acceptable.	- Odour management in accordance with the NEGIP
	Odour, from deceased animals		Deceased animals are removed from pens daily	Low level off-site impacts to amenity **Minor**	Could occur at some time **Possible**	**Medium** Acceptable, subject to regulatory controls	Dead animals are composted on-site, which is the preferred method of disposal for managing mortalities under the NEGIP. The frequency of removal from the pens is also consistent with the NEGIP. Providing the minimum requirements outlined in the NEGIP are being implemented, the ongoing risk of off-site odour impacts from mortalities management appears to be acceptable.	- Dead pigs must be removed from pens within 24 hours of death; - Mass mortalities contingency plan must be in place
	Noise and dust, from animals and machinery movements		None specified	Low level off-site impacts to amenity **Minor**	Likely to occur only in exceptional circumstances **Rare**	**Low** Acceptable, not subject to controls	Some noise and dust is expected during piggery operations, with the nature of animal noise and machinery movements consistent with that expected from general farming activities in a rural area. There is sufficient separation in place (>1.1 km to nearest rural dwelling, >12 km to nearest populated area); it is not reasonably foreseeable that noise and dust will impact on the amenity of off-site human receptors.	None specified
Holding, feeding and watering of animals within **deep litter shelters**	Nutrient-laden leachate from spent bedding (spilt feed, urine, faeces), accumulated in shelters	Runoff causing impacts to health of immediately adjacent native vegetation (critically endangered TEC[1]) Seepage/infiltration, causing contamination of shallow groundwater	Deep litter shelters comprise concrete base Shelters are not washed out after spent bedding removal	Short-term impact to an area of high conservation value **Major**	Will probably not occur in most circumstances **Unlikely**	**Medium** Acceptable, subject to regulatory controls	The deep litter shelters have been constructed with a concrete base, which is consistent with the NEGIP. It is noted shelters are not washed out or cleaned after spent bedding is removed, nor is there any infrastructure in place for containment of wash water, should this activity be conducted. Providing the deep litter shelters are managed according to NEGIP recommendations, the ongoing risk of groundwater contamination from ongoing operation of the deep litter shelters appears to be acceptable.	- Infrastructure design and operational requirements specified in infrastructure table - All infrastructure must be maintained to ensure integrity is sustained

[1] The Eucalypt Woodlands are listed as a critically endangered Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 2016 (Cth)*, and a Priority Ecological Community (PEC, P3) under the *Biodiversity Conservation Act 2016 (WA)*

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls
Source/ Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
	Odour, from animals and spent bedding accumulated in shelters	Unreasonable interference with the health, welfare, convenience, comfort and amenity of nearby sensitive receptors (6 within 3 km radius)	Spent bedding is removed from pens about every 8 weeks	Low level off-site impacts to amenity **Minor**	Could occur at some time **Possible**	**Medium** Acceptable, subject to regulatory controls	The NEGIP recommends fixed separation distances of at least 250 m to rural dwellings and 750 m to a townsite. The closest rural dwelling is about 1.1 km west of the piggery and five others within a 3 km radius. The nearest small town of Cuballing is about 12 km to the west. There is no recorded history of nuisance odour complaints according to the Shire of Cuballing from historical operations at this site; however, this alone is not an indicator that odour is not an issue. It is noted the shelters are not washed or rinsed out after spent bedding is removed, which may increase the risk of odour generation and off-site impacts. However, it is generally accepted that washing out shelters is not required in climates with an annual moisture deficit. Providing the deep litter shelters are managed according to NEGIP recommendations, the ongoing risk of off-site odour impacts from ongoing operations appear to be acceptable.	- Maximum stocking numbers specified for each size shelter - Spent bedding must be removed once every 7 weeks from deep litter shelters
	Odour, from deceased animals		Deceased animals are removed from pens daily	Low level off-site impacts to amenity **Minor**	Could occur at some time **Possible**	**Medium** Acceptable, subject to regulatory controls	Mortalities in the deep litter shelters are managed in the same manner as the conventional sheds (refer to above), which appears to be acceptable.	Refer above
	Noise and dust, from animals and machinery movements		None specified	Low level off-site impacts to amenity **Minor**	Likely to occur only in exceptional circumstances **Rare**	**Low** Acceptable, not subject to controls	Noise and dust from operation of the deep litter shelters is not expected to differ significantly from the conventional sheds (refer to above), which appears to be acceptable.	None specified
Category 2: Solid waste management and storage								
Desludging of ponds	Odour, from the disturbing and handling of pond solids	Unreasonable interference with the health, welfare, convenience, comfort and amenity of nearby sensitive receptors (6 within 3 km radius)	None specified	Low level off-site impacts to amenity **Minor**	Could occur at some time **Possible**	**Medium** Acceptable, subject to regulatory controls	Periodic desludging of the anaerobic pond is required to minimise the buildup of sediment and odour issues, thereby maintaining the efficiency and effectiveness of the wastewater treatment process. However, the more frequent disturbing and handling of pond solids increases the frequency of odour events during desludging activities, if not managed carefully. The delegated officer considers the risk of relatively short-term odour impacts that may arise as part of regular maintenance of the anaerobic ponds (to manage sludge levels) will result in a better outcome for off-site receptors than ongoing nuisance odour that may result from poorly maintained ponds. Providing that desludging activities are conducted in a manner consistent with the NEGIP, the ongoing risk of odour impacts appears to be acceptable.	- Odour management in accordance with the NEGIP
Transfer of spent bedding from deep litter shelters Stockpiling of spent bedding Processing of mortalities	Nutrient-laden leachate from spent bedding, mobilised by surface water runoff	Runoff causing impacts to health of immediately adjacent native vegetation (critically endangered TEC[2]) Seepage/infiltration, causing contamination of shallow groundwater	Proposal to construct a bunded hardstand pad for stockpiling and composting spent bedding and mortalities, including runoff pond to contain runoff Some spent bedding is used in processing mortalities	Short-term impact to an area of high conservation value **Major**	Likely to occur only in exceptional circumstances **Rare**	**Medium** Acceptable, subject to regulatory controls	Spent bedding removed from the deep litter shelters and mortalities are currently stockpiled in a cleared paddock on the premises, where they are composted. This area does not constitute an impermeable hardstand pad. The applicant is proposing to construct an impermeable hardstand pad as part of this application. The pad will be sufficiently sized to manage the volume of solids generated by the piggery operations, and a runoff collection pond has been constructed at the lowest point of the pad, to contain surface runoff and leachate from the stockpiles. The pond has been sufficiently sized to contain the volume of runoff generated from the catchment area, to ensure the frequency of spill events are less than an average of one in 20 years. Works conditions have been included on the licence to require construction of this pad, which is proposed to be constructed with a CCL from site-won materials. The applicant is also investigating whether compacting the in-situ soils (clayey gravel) can achieve an acceptable standard.	- Works conditions to require construction of a compost hardstand pad - Construction certification and reporting requirements

[2] The Eucalypt Woodlands are listed as a critically endangered Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 2016 (Cth)*, and a Priority Ecological Community (PEC, P3) under the *Biodiversity Conservation Act 2016 (WA)*

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls
Source/ Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
							Providing that spent bedding and mortalities are stored and processed, respectively, on the hardstand pad (once constructed) and according to NEGIP recommendations, the ongoing risk of impacts appears to be acceptable.	
	Odour, from stockpiles	Unreasonable interference with the health, welfare, convenience, comfort and amenity of nearby sensitive receptors (6 within 3 km radius)	Spent bedding composted in large windrows Mortalities processed in large bays (separate to bedding)	Low level off-site impacts to amenity **Minor**	Could occur at some time **Possible**	**Medium** Acceptable, subject to regulatory controls	Spent bedding and dead animals are composted on-site, which is the preferred method of disposal for managing manure and mortalities under the NEGIP. Providing the minimum requirements outlined in the NEGIP are being implemented, the ongoing risk of off-site odour impacts from composting operations appears to be acceptable.	- Stockpile management specified, in accordance with the NEGIP

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

8. Decision

The delegated officer has determined that ongoing operation of an intensive piggery on the premises, with an assessed design capacity of 2,887 SPUs, does not pose an unacceptable risk of impacts to public health or the environment, providing the following aspects are addressed:

- information is provided to demonstrate whether the trench is fit for purpose (to continue to be used for holding raw effluent); and
- the proposed impermeable, bunded area for stockpiling and composting spent bedding and mortalities and pond sludge, with associated runoff collection pond, are constructed.

The remaining aspects of the operation, such as the siting, design and day-to-day management of the piggery has been assessed as being consistent with the NEGIP and do not pose an unacceptable risk of impacts to public health and the environment. This is based on the following:

- being located in a climate with high annual moisture deficit, which lowers the overall risk of environmental impacts commonly associated with wet conditions;
- the piggery being located on priority agricultural land and well separated from populated areas;
- both the conventional sheds and deep litter shelters comprise a concrete hardstand base;
- there being sufficient storage capacity for effluent generated from operations (with additional storage options available), noting most of the effluent is used as part of the composting process;
- spent bedding and mortalities being processed to produce a proper compost product, which can be taken off the premises for spreading without additional approvals; and
- there being no recorded complaints by the Shire of Cuballing or the department from piggery operations to date.

Key risks from ongoing operations of this piggery largely relate to the management of solid and liquid wastes, i.e., containment and transfer of effluent within ponds, and storage and composting of manure. Controls have been added to the licence to require careful review of current management, including regular monitoring, to ensure that nutrient runoff and leakage, and other forms of land degradation do not, and are not, occurring.

Applicant comments on drafts

The applicant was provided with drafts of the licence and this report on 26 July 2024 and apart from seeking clarification on some requirements, requested the licence be issued with no further comment.

Licence L9435/2024/1 that accompanies this report authorises emissions and discharges from ongoing operations of the existing piggery complex (2,887 SPU capacity). The conditions in the licence, as outlined in the above risk table, have been determined in accordance with the *Guideline: Setting Conditions* (DWER 2020).

9. Conclusion

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

In accordance with the *Guidance Statement: Licence duration* (DER 2016), the duration of the licence will be 20 years.

References

1. Animal Welfare Working Group (AWWG) 2008, *Model Code of Practice for the Welfare of Animals: Pigs*, Primary Industries Ministerial Council, CSIRO Publishing.
2. Australian Pork Ltd 2018, *National Environmental Guidelines for Indoor Piggeries* (NEGIP).
3. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. DER 2016, *Guidance Statement: Licence duration*, Perth, Western Australia.
5. Department of Water and Environmental Regulation (DWER) 2019, *Guideline: Industry Regulation Guide to Licensing*, Perth, Western Australia.
6. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.