



Application for Works Approval

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

Works approval	W6867/2023/1
Works approval Holder	Emu Hill Pastoral Pty Ltd
DWER file number	DER2023/000737
Premises	Emu Hill Pastoral Cattle Feedlot 3957 Kondinin-Naremben Road SOUTH KUMININ WA 6369
Date of report	29 April 2024
Status of report	Final

Purpose and scope of assessment

Emu Hill Pastoral Pty Ltd (EHP/the applicant) propose to upgrade their existing cattle feedlot in South-Kuminin. An application for works approval was submitted under Division 3 Part V of the Environmental Protection Act (EP Act) on 16 November 2023.

This report sets out the delegated officer's assessment of potential risk events arising from emissions and discharges that will be generated from the increased design capacity at the prescribed 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>.

Application details

Overview

'Emu Hill Pastoral' is an existing cattle feedlot that has been operating since 2013 in the rural locality of South-Kuminin, about 280 km east of Perth.

The applicant proposes to replace the existing small feedlot with a larger open-air feedlot facility to accommodate a herd of 10,000 head (8,400 SCUs, Standard Cattle Units) at their 4,000 ha farming property. The proposed construction works are planned to occur in four stages throughout a five-year period – at completion of the first stage (2,500 head), EHP will seek a licence to operate.

Following the completion of each stage, the newly built pens will be used in preference to the existing small feedlot pens, which will be decommissioned once the new facility has been completed.

The applicant does not have an existing licence and is seeking a works approval for the assessed design capacity outlined in Table 1, in accordance with the Environmental Protection Regulations 1987:

Table 1: Prescribed premises category

Classification of premises	Assessed design capacity (as per application)
Category 1: Cattle feedlot - premises on which the watering and feeding of cattle occurs, being premises – (a) situated less than 100m from a watercourse; and (b) on which the number of cattle per hectare exceeds 50	10,000 head at any one time (8,400 SCUs equivalent)

Background

The applicant has been operating their grain growing and cattle feeding enterprise since 2013, with a self-replacing herd of 350 Angus breeding cattle. The existing small feedlot has been used to finish up to 1,200 head per year on a grain fed Angus yearling program for Coles and Harvey Beef.

The applicant is now seeking to expand its business and build new feeding pen facilities and gain accreditation under the National Feedlot Accreditation Scheme (NFAS), a voluntary, industry-sponsored quality assurance scheme that requires the operator to have in place all relevant state and local government approvals to operate.

Proposal details

The applicant has given due regard to the National Beef Cattle Feedlot Environmental Code of Practice (MLA 2012a) (Code of Practice) and the accompanying National Guidelines for Beef Cattle Feedlots in Australia (MLA 2012b), to ensure the new feedlot is appropriately sited, designed, constructed, and managed.

The first stage will have a design capacity of 2,500 head (2,075 SCU) and will include a set of cattle handling yards, the first row of cattle pens (and associated feed lane and drainage), an evaporation pond, and a solid waste storage pad that is sized for the first row only. Manure will temporarily be stored in a few of the pens until the row has been completed.

The subsequent three stages will include the construction of one row of additional pens, including feed and cattle lanes, and effluent catch drains, and a commensurate increase in the size of the solid waste storage pad.

Feedlot design and layout

Cattle yards

A set of cattle handling yards will be constructed in the north-east corner of the facility, within the controlled drainage area. The yards will be constructed with a minimum 300 mm thick compacted clay liner (CCL) using onsite clays that have been laboratory tested to indicate a permeability in the order of 7.0×10^{-9} m/s.

Feed and cattle lanes

Four feed lanes will be constructed with one positioned at the high point (front) of each row of pens. The feed lanes will be 5 m wide and run north-south with turning capacity at each end. The feed lanes will be constructed with a 300 mm thick CCL and be located within the controlled drainage area.

Four cattle lanes will be constructed, at the low point (back) of each row of pens. Each lane will be 6 m wide, run north-south, and be gated at each end. A single cattle lane will be located on the north side of the pens, being 10 m wide and running east-west connecting each row to the cattle yards. The cattle lanes will be constructed with a 300 mm thick CCL and be located within the controlled drainage area.

Feed pens

The feedlot will comprise 4 rows of 14 individual pens (total of 56 pens). Each row will hold a maximum of 2,500 head (2,075 SCU) at a stocking density of 14.5 m²/SCU.

Each pen will have a 2.5 m concrete apron which slopes surface runoff away from the feed/water troughs and directing to an effluent catch drain along the low point (back) of each row of pens. Each pen will be surrounded by fencing and will be constructed to allow for future installation of shade.

The pen floors will be constructed with a 300 mm thick CCL and be located within the controlled drainage area. Each row will comprise:

- 8 x 'A' type pens 54m x 48m, designed to hold 178 SCU;
- 5 x 'B' type pens 36m x 48m, designed to hold 119 SCU;
- 1 x 'H' type pen 12m x 48 x 6m, designed as a hospital pen.

Solid waste storage pad

As part of the solid waste management system of the cattle feedlot, a solid waste storage pad will be constructed for stockpiling of manure. The pad will be constructed with a 300 mm thick CCL and be located within the controlled drainage area.

The pad won't be constructed until stage 4 of the project; manure and mortalities will be initially stockpiled and managed within a few empty pens that will be specifically constructed ahead of time in the following row for this purpose. The pad will then be constructed at the completion of the project and will be used once all 4 rows are being used for feedlotting.

The pad will cover a total footprint of 14,400 m², which is expected to be sufficient for managing the amount of manure and mortalities that will be generated by the full feedlot complex.

Evaporation pond and drainage system

The controlled drainage area for the entire feedlot, which comprises the cattle yards, 4 rows of feed pens with associated feed and cattle lanes, and effluent catch drains, covers a total footprint of 174,141 m².

Each row of pens and the solid waste storage pad is designed with a slope of 3 – 5%, to facilitate drainage of overland flow from the pen surface towards an effluent catch drain on the downslope side of each row and into the evaporation pond.

There is no sedimentation system proposed, as regular cleaning of the pens and catch drains is expected to minimise the amount of solids entering the evaporation pond, in addition to the low rainfall environment.

At the end of the main catch drain, a spillway will allow for runoff to enter the evaporation pond. This spillway will be constructed using concrete and measure 2 m in width.

The evaporation pond is designed to contain all effluent runoff from the controlled drainage area and is designed to spill no more than an average of once in 20 years. Based on these requirements, the pond size was calculated using SILO data as shown in Appendix 1. The critical design elements were found to be:

- Pond area of 10,780 m²;
- Depth of 2.52 m (including a 0.2 m freeboard);
- Design volume of 25,010 m³.

Refer to Appendix 2 for relevant diagram and location specifications for the proposed site layout and infrastructure.

Construction schedule

The applicant anticipates construction of the entire feedlot will be completed by early 2028, with the following schedule for each stage:

- Stage 1 – comprising the cattle handling yards, first row of feed pens and associated feed and cattle lanes, effluent catch drain, and evaporation pond, and the hardstand pad for the first few feed pens of the second row and associated effluent catch drain; works expected to be completed by December 2024, in which operations will commence shortly after;
- Stage 2 – comprising the completion of the second row of feed pens and associated feed and cattle lanes, effluent catch drain, and the hardstand pad for the first few feed pens of the third row and associated effluent catch drain; works expected to be completed by February 2026;
- Stage 3 – comprising the completion of the third row of feed pens and associated feed and cattle lanes, effluent catch drain, and the hardstand pad for the first few feed pens of the fourth row and associated effluent catch drain; works expected to be completed by February 2027; and
- Stage 4 – comprising the completion of the fourth row of feed pens and associated feed and cattle lanes, effluent catch drain, and the solid waste storage pad and associated effluent catch drain; works expected to be completed by February 2028.

Operational aspects

Feedlot operations

Purchased feeder cattle will be brought onto the premises and unloaded into the cattle yards, where they will be inspected for fitness and grouped into feeding lots, before being placed in pens with other animals of similar weight and fed and watered for an average of 90 days (3 rotations per year). Most feed will be grown on the premises and be brought in as required. Feed will be stored in a combination of silos, silo bags, sheds, and covered silage pits.

Animals will initially start on high fibre rations, prior to transitioning over 3 weeks to a nutrient-

dense finisher ration. Rations will be prepared daily according to the appetite of the pens lots on feed.

Entry weight will be about 320 kg and average exit weight about 520 kg, depending on market requirements. Once the animals have grown to the required criteria, they will be trucked off-site directly to clients for slaughter.

Straw bedding will be used in the 3 winter months to promote cattle comfort, welfare and also to soak up cattle waste. It is proposed that two bales of straw will be added per pen weekly during the winter months, which equates to about 312 bales of straw used for bedding each year.

The feedlot maintenance program, including regular cleaning, visual checks, record keeping, training and standards (see Table 3) will ensure that risks to the environment, public health and amenity are mitigated from cattle feedlot operations.

Surface water management

Clean water diversion

Diversion drains are to be placed above feed areas to prevent ingress of clean stormwater. The drains will divert uncontaminated upslope runoff around the feedlot complex.

Effluent runoff and capture

All pens will be constructed with a 3 – 5% slope to facilitate drainage of surface water runoff from the pens within the controlled drainage area. The runoff is firstly directed towards the catch drains and directed by a gradual slope towards the evaporation pond. The applicant expects urine will be absorbed within the straw bedding during operation in the cooler months.

Solid waste management

Manure generation and feedlot cleaning

Pens will be cleaned of manure every 12 weeks, depending on weather conditions, using a front end-loader, and a box scraper will be used to clean under the fences. Cleaning at this frequency in this climate is expected to minimise the amount of solids entering the evaporation pond. Catch drains will also be scraped clean, when required, to prevent manure impacting efficient drainage.

The applicant has calculated an annual total solids (TS) harvest from the pens to be about 3,389 t/yr, based on a manure production of about 410 kg/SCU (2,906 t/yr) and about 1,500 t/yr of straw that will be added to the pens as bedding material, and the feedlot being operated for a conservative figure of 308 days per year.

Manure harvested from the pens will be stockpiled on the proposed designated solid waste storage pad. Manure will be stored in windrows and turned using a compost turner as appropriate, to produce a consistent compost product. The windrows will be designed with a triangular cross-section, with a base width of about 3 m and maximum height of 2 m.

During construction, manure will temporarily be stored within a few empty pens until the entire row is operational.

Management of deceased animals

The applicant expects a mortality rate of about 0.5%, which equates to about 150 animals per year. Dead animals will be transported directly from the pens to the compost pad for composting.

There will be daily inspections of the pens where mortalities will be removed to the solid waste storage pad on the same day, laid in windrows on a bed of compost at least 1 m thick and covered with a layer of manure 2 – 3 m thick.

The profile of compost windrows will be peaked (triangular) to assist with water shedding. Windrows will also run north to south to facilitate unimpeded drainage of runoff to the evaporation pond. Composting duration is expected to take around 4 – 6 months to complete, therefore about 23 carcasses will be being composted at any one time.

The windrows will be left undisturbed (no mixing or turning) for the duration, depending on external air temperatures, moisture content of the composting pile and size of carcasses, which is expected to reduce the likelihood of odour generation.

The applicant has calculated the annual total carcass compost produced to be about 13 t/yr, based on a cattle carcass moisture content of 72% and an assumed loss of 35% solids through the composting process.

Manure utilisation

The applicant owns and leases a total of 4,000 ha of cropping land within the local district which it uses to crop cereal grains and oaten hay. As the soils are low in soil organic matter (soil carbon) and other nutrients, the applicant proposes to spread the straw/manure product and carcass compost product to enhance the soil carbon, water holding capacity and nutrient deficits.

The primary nutrients used in determining limits for cropping soil are nitrogen, phosphorus and potassium. Phosphorus is the only nutrient with significant capacity for soil storage and the surplus amount that can be added to the soil annually depends on the life of the feedlot, which the applicant considers to be about 30 years.

Based on the cropping nutrient balance provided with the application, the applicant proposes annual spreading rates of 2.2 t/ha and 3.0 t/ha for the straw/manure product and carcass compost, respectively, for a winter cereal hay crop yielding 4 t/ha; and 1.4 t/ha and 2.0 t/ha for the straw/manure product and carcass compost, respectively, for a grain wheat crop yielding 2 t/ha.

Based on the annual TS harvest from the pens (3,389 t/yr dry straw/manure product) and annual carcass compost produced (13 t/yr), about 2,542 ha of land will be required to sustainably use the available nutrients each year.

Alternative crops have also been proposed by the applicant to demonstrate how a variety of crops can be used to ensure the nutrient offtake is balanced with the cropping requirements.

DPIRD technical review

DPIRD has reviewed the proposed manure utilisation and cropping nutrient balance and advises the yearly application of composted manure is acceptable, given that the recommendations outlined in Table 2 below are addressed and considered.

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, outside of the feedlot complex and manure utilisation areas (excludes staging or backgrounding);
- vehicle (i.e., livestock truck) movements on private or public roads; and
- land use zoning and compatibility with surrounding land uses.

The works approval is related to category 1 activities only and does not offer the defence to offence provisions in the EP Act (see sections 74, 74A and 74B) relating to emissions or environmental impacts arising from prescribed and non-prescribed activities, including those listed above.

Consultation

The application was referred to relevant public authorities and advertised for public comment on the department's website during December 2023. No public submissions were received in the timeframe specified.

Location and siting

Land use and sensitive receptors

The land surrounding the premises has been historically cleared and drained for agricultural purposes and as a result, is largely cleared of remnant vegetation. The site is zoned 'farming' under the Shire's town planning scheme, with surrounding land use mainly agricultural in nature, including stock grazing and pasture development.

Below provides a summary of potential human and environmental receptors that may be impacted from activities upon or emission and discharges from the prescribed premises (Guideline: Environmental siting (DWER 2020). In accordance with the *Guideline: Risk assessments* (DWER 2020)), the delegated officer has excluded employees, visitors and contractors from the assessment. Protection of these parties often involves different exposure risks and prevention strategies, which are provided under state legislation:

- The premises is surrounded by regional open space and 3 rural dwellings identified between 4 and 6 km from the proposed feedlot site;
- There are few environmental receptors nearby with Priority 3 – Threatened Ecological Communities and Priority 3 – Threatened and Priority Flora within 5 km from the proposed feedlot, with one identification of Threatened Fauna located within the premises boundary;
- A non-perennial watercourse is located within the premises boundary and continues to flow offsite from the northern boundary of the premises.

Environmental and Heritage Considerations

- Has no known European or Aboriginal heritage significance;
- Is not a registered contaminated site;
- Is not located within an Environmentally Sensitive Area (ESA);
- Does not contain any Bush Forever sites, nor are there any Bush Forever sites in the immediate of the subject site;
- Is not a known habitat for conservation significant flora or fauna.

Climate

The Shire of Narembeen experiences a climate consisting of hot dry summers and warmer winters with below average rainfall compared to Perth statistics (BOM, 2024).

Narembeen has a mean rainfall of 335.7 mm from the years 1927 to 2022, with the heaviest rainfall period occurring during the winter months from June to August (BOM, 2024). Majority of wind at 9am blows from the east, about 19% of the time, and majority of wind at 3pm blows from the south-east and north-west at about 18% from each direction.

Soils and landscape

The landscape has a relatively flat plain where about 150 m west of the premises boundary is a large area of land subject to inundation.

There are remnant drainage lines from ancient salt lakes, which now only function in very wet years. The area is mapped as having a low risk of acid sulfate soils. There are two soil-landscape zones on site:

- Kellerberrin 3 non-saline phase (258Kb_3ns): Areas of reddish, powdery surfaced, "Morrel soils", often adjacent to salt lakes (DPIRD, WA's Soil Landscape Mapping);
- Bending 2 aeolian phase (258Bn_2a): Very smooth convex to linear gently undulating rises with calcareous aeolian deposits forming red and brown calcareous loams that overprint various substrates (eg gravel plain and granite), with York, Salmon, Gimlet and Morrel vegetation. (DPIRD, WA's Soil Landscape Mapping)

Groundwater

The proposed site is located within the Westonia groundwater area, which is proclaimed under

the *RIWI Act 1914*. The nearest groundwater monitoring bore to the premises boundary, stated that water was 'struck' at 32 m depth. This suggests the separation distance to groundwater in the area is around 32 m (Water Information Reporting, 2024).

Surface water

The proposed site is located within a proclaimed surface water area under the *RIWI Act 1914*, within the Avon River System surface water area, Swan Avon Lockhart catchment and the Wakeman Creek sub-catchment. The proposed site is not located within a Public Drinking Water Source Area.

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 National Guidelines (MLA 2012a).

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 proposed feedlot capacity (8,400 SCU), the calculated separation distance to the nearest receptor, being a single rural or farm dwelling, is 1.7 km, which is well within the actual distance of 4.3 km. The calculated separation distance to the nearest town, being the medium-sized town of Narembeen (125-500 persons), is 6.25 km, which also is well within the actual distance of about 10.3 km.

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 works approval 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

The table below describes the risk events associated with the amendments consistent with the *Guidance Statement: Risk Assessments* (DER 2017). The table below 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.

Table 3: Risk assessment

Risk Event				Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls	
Source/ Activities	Potential emissions	Potential receptors, pathway and impact	Licence holder controls						
Construction works									
Construction of an evaporation pond, cattle yards, pens, corresponding lanes, drains/culvert drains and solid waste storage area	Noise and fugitive dust associated with construction civil excavation, earthworks, construction works, etc.	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (>4 km)	Adequate separation to nearby receptors (>3 km)	Minimal impacts to amenity on local scale Slight	Likely to occur only in exceptional circumstances Rare	Low Acceptable, not subject to controls	The delegated officer considers there is sufficient separation in place (>4 km to nearest rural dwelling, >10 km to nearest town), and therefore does not reasonably foresee that noise and dust from construction works will impact on the amenity or health of off-site human receptors.	<u>Works approval controls:</u> None specified.	
Time limited operations and full operations									
Category 1: Cattle feedlot operations									
Operation of the feedlot and associated infrastructure, including holding, feeding and watering of animals within feedlot	Odour from animals and manure accumulated in feedlot pens	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (>4 km)	Any odour complaints received by the applicant will be correlated with weather conditions and the operations at the feedlot facility at the time and a register will be kept. Straw-based bedding system to absorb leachates (in winter) Regular pen inspections and cleaning Stocking density of 14.5 m ² /SCU within the feedlot pens Sufficient separation distance in place to nearby human receptors	Mid-level on-site impacts Low-level off-site impacts on local scale Moderate	Likely to occur only in exceptional circumstances Rare	Low Acceptable, subject to regulatory controls	The delegated officer considers there is sufficient separation in place (>4 km to nearest rural dwelling, >10 km to nearest town). Providing the stocking density in pens does not exceed 14.5 m ² /SCU and the pens are cleaned after every rotation (every 12 weeks), the delegated officer considers it unlikely that odour from feedlot operations will significantly impact on the amenity or health of off-site human receptors. As the proposed controls are necessary for maintaining a low level of risk, they will be imposed on the works approval and the licence as operational controls.	<u>Works approval controls (TLO):</u> - Must operate pens with a minimum stocking density of 14.5 m ² /SCU - Pens must be inspected daily and cleaned out after every rotation or every 12 weeks <u>Licence controls:</u> As above.	
	Odour from manure and nutrient-laden leachate build up in drains and evaporation pond		Sludge removed from evaporation pond and transported to the solid waste storage hardstand pad Sufficient separation distance in place to nearby human receptors Drains and pens cleaned every 12 weeks to prevent build up of solid waste and risk of solid waste entering the evaporation pond A visual check of the pen surface, yards, drains and evaporation pond will be made weekly to ensure no blockages	Low level impacts to amenity on local scale Minor	Likely to occur only in exceptional circumstances Rare		Low Acceptable, based on applicant controls being implemented	The delegated officer considers there is sufficient separation in place (>4 km to nearest rural dwelling, >10 km to nearest town). Providing the evaporation pond is maintained to ensure an ARI of 1:20, the delegated officer considers it unlikely that odour from the evaporation pond will significantly impact on the amenity or health of off-site human receptors. As the proposed controls are necessary for maintaining a low level of risk, they will be imposed on the works approval and the licence as operational controls.	<u>Works approval controls (TLO):</u> - Drains must be maintained to ensure drainage pathways to the evaporation pond are free flowing after rainfall - Solid waste must be collected from the pens and drains every 12 weeks to prevent solid waste entering the evaporation pond - A visual check of the pen surface, yards, drains and evaporation pond will be made weekly to ensure no blockages <u>Licence controls:</u> As above.
	Nutrient-laden leachate (from manure, urine) mobilized by surface water runoff		Seepage/ infiltration causing groundwater contamination	Feedlot and associated infrastructure located on a hardstand with a CCL Feedlot and associated infrastructure constructed within a controlled drainage area Straw-based bedding system to absorb leachates (in winter)	Low-level off-site impacts on local scale Minor		Not likely to occur in most circumstances Unlikely	Medium Acceptable, subject to regulatory controls	As part of the site identification process on-site clays have been tested to confirm suitability and have achieved a permeability ratio of 7 x 10 ⁻⁹ m/s. To ensure an acceptable level of risk is maintained during operations and to ensure consistency with the Code (MLA 2012a), the following infrastructure controls will be imposed on the works approval: - Pen surfaces, drains and ponds must be constructed with a minimum 300 mm thick CCL. The delegated officer considers the above controls will ensure the risk of groundwater contamination from

							feedlot activities is acceptable. As the proposed controls are critical for maintaining an acceptable level of risk, they will be imposed on the works approval, and required to be maintained on the licence as minimum infrastructure requirements.	
		Uncontrolled discharge/runoff, causing soil, groundwater, or surface water contamination	Feedlot pens constructed within a controlled drainage area, comprising a sloped surface that diverts surface water runoff to the drains that direct runoff towards the evaporation pond	Mid-level on-site impacts Low-level off-site impacts on local scale Moderate	Not likely to occur in most circumstances Unlikely	Medium Acceptable, subject to regulatory controls	Feedlot will be located within a controlled drainage area, which will comprise of sloped pens which divert all contaminated surface water runoff to the drainage system and evaporation pond. The feedlot pen surfaces, and drains have been designed with a gradual slope to facilitate drainage in accordance with the requirements outlined in the Code (MLA 2012a). The delegated officer considers the above controls will ensure the risk of uncontrolled discharges, resulting in soil or groundwater contamination, is acceptable. As the proposed controls are critical for maintaining an acceptable level of risk, they will be imposed on the works approval, and required to be maintained on the licence as minimum infrastructure requirements.	<u>Works approval controls:</u> - Controlled drainage area must be established, containing all key feedlot infrastructure; - Controlled drainage area must be sloped to facilitate drainage the evaporation pond. <u>Licence controls:</u> - Controlled drainage area must be maintained to prevent uncontrolled runoff of contaminated surface water.
		Overtopping of drains or evaporation pond and spills/leaks causing soil or groundwater contamination	Evaporation pond designed with sufficient storage capacity Drains designed to direct all wastewater through to the evaporation pond without any spills or leaks Regular cleaning and visual inspections of the drains to prevent likelihood of blockages resulting in overtopping or spills Desludging of evaporation pond	Low level impacts to amenity on local scale Minor	Likely to occur only in exceptional circumstances Rare	Low Acceptable, based on applicant controls being implemented	The design of the pond is sufficient to ensure it will spill no more frequently than an average of one in 20 years. The design of the drains will direct all wastewater flow to the evaporation pond. The delegated officer considers the above controls will ensure the risk of overtopping of containment infrastructure, resulting in soil or groundwater contamination, is acceptable. As the proposed controls are critical for maintaining an acceptable level of risk, they will be imposed on the works approval, and required to be maintained on the licence as minimum infrastructure requirements.	<u>Works approval controls:</u> - Containment infrastructure must be constructed in accordance with critical design elements specified in plan. - Drains must be maintained to ensure drainage pathways to the evaporation pond are free flowing after rainfall - Solid waste must be collected from the pens and drains every 12 weeks to prevent solid waste entering the evaporation pond - A visual check of the pen surface, yards, drains and evaporation pond will be made weekly to ensure no blockages <u>Licence controls:</u> - Operational freeboard requirement of 200 mm must be maintained on the evaporation pond - Sludge must be removed from the evaporation ponds annually.
	Noise from animals and machinery movements	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (>4 km)	Sufficient separation distance in place to nearby human receptors	Low level off-site impacts Minor	Likely to occur only in exceptional circumstances Rare	Low Acceptable, subject to regulatory controls	The delegated officer considers there is sufficient separation in place (>4 km to nearest rural dwelling, >10 km to nearest town), and therefore does not reasonably foresee that noise and dust from vehicle movements as part of feedlot operations will impact on the amenity or health of off-site human receptors	<u>Works approval controls:</u> None specified. <u>Licence controls:</u> None specified.
	Fugitive dust, from truck movements on gravel/unsealed roads							
Solid waste storage area hardstand windrow for the decomposition of deceased animals	Nutrient-laden leachate from decomposition of animals	Uncontrolled discharge, causing contamination to nearby environmental receptors	Construction of bunded hardstand pad for composting operations Regular inspections	Minimal impacts to amenity on local scale Slight	Not likely to occur in most circumstances Unlikely	Low Acceptable, based on applicant controls implemented	The solid waste storage area for mortalities will be constructed as a hardstand pad (300 mm thick CCL). The delegated officer considers this control to limit the environmental risk to an acceptable level due to average evaporation being higher than average rainfall for the area and sufficient separation distance to groundwater (estimated >30 mbgl). As the proposed controls are necessary for maintaining a low level of risk, they will be imposed on the works approval and the licence as operational controls.	<u>Works approval controls:</u> - Containment infrastructure must be constructed in accordance with critical design elements specified in plan. <u>Licence controls:</u> - Solid waste storage area hardstand must be maintained to ensure integrity is sustained.
	Odour, from decomposition of animals	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (>3 km)	Carcasses will be placed on 1m of manure/spent bedding compost and covered with another 2-3m and left to decompose undisturbed	Minimal impacts to amenity on local scale Slight	Not likely to occur in most circumstances Unlikely	Low Acceptable, based on applicant controls	The delegated officer considers there is sufficient separation in place (>4 km to nearest rural dwelling, >10 km to nearest town). Providing the carcasses are placed in a separate windrow on the hardstand, undisturbed and covered with 2-3m of manure/spent bedding as soon as practicable after	<u>Works approval controls:</u> - Mortalities must be placed on 1m of manure/spent bedding compost and covered with another 2-3m and remain undisturbed until decomposition has fully occurred

						being implemented	placement, the delegated officer considers it unlikely that odour from decomposition will significantly impact on the amenity or health of off-site human receptors. As the proposed controls are necessary for maintaining a low level of risk, they will be imposed on the works approval and the licence as operational controls.	<u>Licence controls:</u> As above.
Category 1: Manure and waste management								
Management of manure and sludge from drains and pond	Nutrient-laden leachate from manure (faeces urine, spent bedding) mobilised by surface water runoff	Seepage/infiltration causing groundwater contamination	Stockpiles in windrows on a hardstand with a low permeability clay liner	Low-level on-site impacts Minimal off-site impacts on local scale Minor	Not likely to occur in most circumstances Unlikely	Medium Acceptable, subject to regulatory controls	The solid waste storage area for manure and desludging material will be constructed as a bunded hardstand (300 mm CCL) and be located within the controlled drainage area. To ensure an acceptable level of risk is maintained during operations and to ensure consistency with the National Guidelines (MLA 2012a), the following infrastructure controls will be imposed on the works approval: - Manure storage pad must be constructed with minimum 300 mm thick compacted clay layers.	<u>Works approval controls:</u> - Manure stockpile pad must be constructed as per design plans; <u>Licence controls:</u> - Manure stockpile pad must be maintained to ensure integrity is sustained.
		Uncontrolled discharge, causing soil or groundwater contamination	Manure stockpile pad to be constructed within a controlled drainage area, comprising a sloped surface that diverts surface water runoff through drains to the evaporation pond	Mid-level on-site impacts Low-level off-site impacts on local scale Moderate	Not likely to occur in most circumstances Unlikely	Medium Acceptable, subject to regulatory controls	The manure storage area will comprise a bunded hardstand pad that slopes towards the drains to ensure all surface water runoff is contained and diverted to the evaporation pond. The delegated officer considers the above controls will ensure the risk of uncontrolled discharges, resulting in soil or groundwater contamination, is acceptable. As the proposed controls are critical for maintaining an acceptable level of risk, they will be imposed on the works approval, and required to be maintained on the licence as minimum infrastructure requirements.	<u>Works approval controls:</u> - Manure stockpile pad must be constructed, within the controlled drainage area; - Area must be sloped to facilitate drainage to the evaporation pond; <u>Licence controls:</u> - Manure stockpile pad must be maintained to ensure all contaminated surface water runoff is fully contained within.
	Odour, from stockpiled manure and desludging material	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (>3 km)	Manure stockpiled in rows and a compost turner will be used to encourage the decomposing process	Minimal impacts to amenity on local scale Slight	Not likely to occur in most circumstances Unlikely	Low Acceptable, based on applicant controls being implemented	The delegated officer considers there is sufficient separation in place (>4 km to nearest rural dwelling, >10 km to nearest town). Providing the manure and desludging material is to be stockpiled in low profile windrows the delegated officer considers it unlikely that odour from manure storage or composting operations will significantly impact on the amenity or health of off-site human receptors. As the proposed controls are necessary for maintaining a low level of risk, they will be imposed on the works approval and the licence as operational controls.	<u>Works approval controls:</u> - Manure is to be stockpiled in low profile windrows; <u>Licence controls:</u> As above.
Spreading of aged solid waste over 2,542 ha of suitable dryland cropping land	Leaching or runoff of nutrients from spread of processed manure and carcass compost	Contamination of soil, causing contamination of shallow groundwater Runoff from spread areas causing contamination of waterlines Soil acidification Excessive build-up of soil P & N	Processed manure won't be applied within 25 m of the property boundary and dams, 50 m from watercourses, 50 m from bores. Ensure even spread at yearly application rates outlined in the applicant's nutrient balance for the specific crop in that paddock	Mid-level on-site impacts Moderate	Could occur at some time Possible	Medium Acceptable, subject to regulatory controls	The delegated officer has considered the applicant's proposal to spread processed manure on the premises (see section operational aspects section) and has determined the yearly application rates in accordance with the nutrient balance over a minimum of 2,542 ha of cropping land is the most appropriate method to maintain the soil's capacity to absorb nutrients and to limit water repellence. As the proposed controls are critical for maintaining an acceptable level of risk, they will be imposed on the works approval for time limited operations, and on the licence as ongoing operational controls.	<u>Works approval controls:</u> - Manure must only be spread at an application rate in accordance with the nutrient balance (see 'Operational aspects' section above); - Must only be spread across specified manure utilisation areas, with even distribution and only onto areas growing crops or pasture; - Must conduct soil testing of nutrients, before and after first application; - Soil testing must be conducted at regular depths down the soil profile; - Processed manure won't be applied within 25m of the property boundary and dams, 50m from watercourses, 50m from bores. <u>Licence controls:</u> As above.
	Odour, from spread of processed manure and	Unreasonable interference with the health, welfare,	The area that receives the compost will likely change each	Minimal impacts to	Not likely to occur in most	Medium Acceptable,	The delegated officer considers there is sufficient separation in place (>4 km to nearest rural dwelling,	<u>Works approval controls:</u>

	carcass compost	convenience, comfort, or amenity of nearby sensitive receptors (>4 km)	<p>year, as the farms cropping/pasture rotation changes each year.</p> <p>Processed manure won't be applied within 25 m of the property boundary and dams, 50 m from watercourses, 50 m from bores.</p> <p>The utilisation areas are harvested at least once every 12 months.</p> <p>If animals are ever allowed to access the paddocks that have received the processed manure, there will be a withholding period of at least 3 weeks between spreading and grazing.</p>	amenity on local scale Slight	circumstances Unlikely	subject to regulatory controls	<p>>10 km to nearest town). Given the proposed controls, the delegated officer considers it unlikely that odour from the spreading of manure will significantly impact on the amenity or health of off-site human receptors.</p> <p>As the proposed controls are necessary for maintaining a low level of risk, they will be imposed on the works approval and the licence as operational controls.</p>	<ul style="list-style-type: none"> - Manure is to be stockpiled in low profile windrows; - Processed manure won't be applied within 25 m of the property boundary and dams, 50 m from watercourses, 50 m from bores. - The manure utilisation areas are harvested at least once every 12 months. <p><u>Licence controls:</u> As above</p>
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Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Guidance Statement: Risk Assessments (DER 2017).

Decision

The delegated officer has determined the proposal to construct and operate an intensive open-air cattle feedlot on the premises, with an assessed design capacity of 8,400 SCU, does not pose an unacceptable risk of impacts to on- and off-site receptors. This determination is based on the siting, design and proposed construction and management being consistent with the National Guidelines (MLA 2012):

- sufficient separation to nearby human receptors, as determined by s-factor calculations, groundwater and surface water features;
- the set of pens at the original site being decommissioned (following construction of the new facility);
- proposed stocking density of 14.5 m²/SCU;
- feedlot pens, effluent catch drains, evaporation pond, and solid waste storage pad being constructed with a 300 mm thick CCL;
- key feedlot infrastructure being located within a designated controlled drainage area;
- manure, spent bedding and mortalities to be stockpiled and processed on a designated pad within a controlled drainage area; and
- processed manure and carcass compost being spread at acceptable application rates, and in accordance with a detailed nutrient management plan.

The above controls proposed by the applicant are considered critical for maintaining an acceptable level of risk of environmental impacts, therefore they will be imposed on the works approval as infrastructure controls.

The delegated officer has also considered advice provided by DPIRD regarding the proposal to spread compost and straw/manure on the premises and has imposed additional controls based on that advice to ensure the risk of that activity is acceptable and sustainable.

Works approval and licence

Works Approval W6867/2023/1 that accompanies this report authorises construction and time-limited operations only. The conditions in the issued works approval, as outlined in the above risk table have been determined in accordance with the *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required to authorise emissions associated with the ongoing operation of the premises, e.g. cattle feedlot activities. A risk assessment for the operational phase has been included in this report, however licence conditions will not be finalised until the department assesses the licence application. Conditions will be imposed to ensure day-to-day operations do not pose an unacceptable risk of impacts to on- and off-site receptors.

Applicant comments on draft decision

The applicant was provided with drafts of the works approval and this report on 28 March 2023 and sought only minor comments or corrections.

Conclusion

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

The works approval has been issued with a duration of 5 years.

References

1. Meat and Livestock Australia, 2012, National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition), Perth Western Australia
2. Department of Environment Regulation (DER) 2017, Guidance Statement: Risk Assessments, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2019, Guideline: Decision Making, Perth, Western Australia.
4. Emu Hill Pastoral 2023, Application and supporting documents, Perth, Western Australia
5. Geocortex (GIS) Viewer, 2024, Visual imagery and sensitive receptors, Perth, Western Australia
6. Bureau of Meteorology (BOM), 2024, Climate Data, Perth, Western Australia
7. Water Information Reporting, 2024, Groundwater depth, Perth, Western Australia

Appendix 1: Feedlot Map

