



## Application for works approval

### Division 3, Part V *Environmental Protection Act 1986*

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|                              |   |
|------------------------------|---|
| <b>Works approval number</b> | W6554/2021/1                                    |
| <b>Applicant</b>             | Ucarty Holdings Pty Ltd                         |
| <b>ACN</b>                   | 009 066 479                                     |
| <b>DWER file number</b>      | DER2021/000309                                  |
| <b>Premises</b>              | Ucarty Feedlot<br>Ucarty Road<br>UCARTY WA 6462 |
| <b>Date of report</b>        | 16 June 2022                                    |
| <b>Status of report</b>      | Final   |

## 1. Purpose and scope of assessment

Ucarty Holdings Pty Ltd (the applicant) proposes to upgrade their existing cattle feedlot near Goomalling, about 125 km northeast of Perth. An application for works approval was submitted under Division 3 Part V of the *Environmental Protection Act 1986* (EP Act) on 17 May 2021.

This report sets out the delegated officer's assessment of potential risk events arising from emissions and discharges during construction and operation of infrastructure relating to the prescribed activity.

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

### 2.1 Overview

The applicant proposes to construct a new set of covered cattle feedlot pens, with a design capacity of 1,540 standard cattle units (SCU), at their existing registered premises (R1869/2006/1). The existing premises comprises a 1,500 head open-air cattle feedlot that was subject to works approval W4170/2005/1 and is accredited under the National Feedlot Accreditation Scheme (NFAS).

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

**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 –<br>(a) situated less than 100 metres from a watercourse; and<br>(b) on which the number of cattle per hectare exceeds 50. | 1,540 SCU at any one time, at a maximum stocking density of 4.7 m <sup>2</sup> /SCU (covered pens) |

### 2.2 Proposal details

The proposal (covered cattle feedlot) is the first of its kind to be assessed under the EP Act and is designed to enable the intensive feeding of animals in a manner that generates little direct stormwater runoff.

Key aspects of the proposal include a low rainfall climate (average 349 mm/year) and separation to sensitive surface water systems, which are common constraints for new and existing feedlot developments.

#### 2.2.1 Feedlot design and layout

##### New covered pens

The completed project will comprise a single roofed structure with a total floor area measuring 240 m long and 30 m wide (7,200 m<sup>2</sup>), with 8 individual pens each measuring 30 m long and 30 m wide. For the proposed design capacity of 1,540 SCU, this equates to a stocking density of 4.7 m<sup>2</sup>/SCU, which complies with the minimum stocking density of 2.5 m<sup>2</sup>/SCU for shedded cattle which is a requirement of NFAS accredited feedlots (AUS-MEAT 2018).

The floor surface of the covered pens will be constructed using soils brought in from elsewhere on the premises. The pad will be constructed of 6 x 50 mm compacted layers, to form a thickness of about 300 mm. The bottom 200 mm will be formed using a clay substrate and the top 100 mm with a clay/gravel soil. A single sample of the soil to be used in construction of the clay substrate has been tested as having a coefficient of permeability of

1.52 x 10<sup>-10</sup> m/s, which the applicant advises there is a uniform supply of these soils about 50 m west of the existing outdoor feedlot pens.

The floor surface will also be gently sloped, with a 1% fall east to west and 0.5% north to south to enable feed bunks and water troughs to drain when cleaned occasionally and will comprise a straw-based bedding system to manage the urine and manure generated (like a deep-litter piggery).

The shed will be orientated in a north-south alignment, consistent with the *National Guidelines for Beef Cattle Feedlots in Australia* (MLA 2012a) (National Guidelines), with feed bunks located on the east and west boundaries of the shed. Cattle will enter the shed via a laneway that will run the length of the western boundary.

The applicant does not expect the covered pens to generate a wastewater stream that requires managing, and therefore has not proposed to construct any infrastructure such as drains or ponds for the new covered pens.

#### Existing outdoor feedlot pens

The existing registered feedlot comprises six outdoor pens that have been constructed with a 300 mm thick compacted clay base. Several other larger pens exist on a sandy base that will be discontinued following construction of the new covered pens, as this will negate the need to use these pens in the future.

The applicant advises that permeability testing of the existing clay-lined pens was not conducted on the construction materials, or at any stage during the 15 years the feedlot has been operating. No alterations to the pen surface of the existing pens are proposed in this application.

The outdoor pens have a total floor area measuring 200 m long by 50 m wide (9,600 m<sup>2</sup>), with five pens each measuring 50 m long and 30 m wide (1,500 m<sup>2</sup> per pen) and one pen measuring 50 m wide by 50 m long (2,100 m<sup>2</sup>). These pens are currently being operated with a design capacity of 1,068 SCU, equating to a stocking density of 9 m<sup>2</sup>/SCU, which is within the stocking density range of 9 to 25 m<sup>2</sup>/SCU as required for NFAS accredited feedlots (AUS-MEAT 2018).

#### Evaporation pond and main drain

The applicant proposes to construct a main catch drain along the western edge of the existing outdoor pens, that will divert effluent runoff from the outdoor pens to an existing evaporation pond. The catch drain will be constructed of the same soils that will be used to construct the floor surface of the covered pens.

The applicant advises the existing pond was constructed using in-situ clays and is about 230 m long, 25 m wide and 1.5 m deep. Based on these dimensions, a conservative estimate of the total holding capacity of the pond is about 5,000 m<sup>3</sup>.

The applicant has determined the total surface area of the controlled drainage area to be about 9,600 m<sup>2</sup>. Using a runoff coefficient of 0.2 (calculated using daily SILO data (QDES 2021) with a cumulative rainfall model, and assuming a 20 mm runoff threshold and 0.7 pan evaporation factor from the catchment area), the applicant has determined a minimum storage capacity of 1,119 m<sup>3</sup> is required to contain the estimated volume of runoff of 1:20 year ARI winter rainfall over a 3-year simulation (including safety factor and minimum 500 mm freeboard).

#### Compost pad

The applicant proposes to construct a discrete pad about 2.5 km away from the feedlot infrastructure for the purpose of composting deceased animals. The pad will be constructed by compacting 300 mm of in-situ clay and will be 30 m long and 9 m wide (270 m<sup>2</sup>). The size of the pad is considered by the applicant to be sufficient to compost about 46 animals each year, based on an expected mortality rate of about 0.5% (based on a total feedlot capacity of 3,068 SCU and 3 rotations per year).

The pad will be positioned at the mouth of an existing farm dam, which will be used to contain surface runoff from the pad for evaporation. The applicant advises the dam was constructed using in-situ clays and is about 50 m long, 25 m wide and 3 m deep. Based on these dimensions, a conservative estimate of the total holding capacity of the dam is about 2,000 m<sup>3</sup>.

The applicant has determined the total surface area of the controlled drainage area to be about 270 m<sup>2</sup>. Using a runoff coefficient of 0.2 (calculated using daily SILO data (QDES 2021) with a cumulative rainfall model, and assuming a 20 mm runoff threshold and 0.7 pan evaporation factor from the catchment area), the applicant has determined a minimum storage capacity of 29.2 m<sup>3</sup> is required to contain the estimated runoff of 1:20 year ARI winter rainfall over a 3-year simulation (including safety factor and minimum 500 mm freeboard).

**Key findings:**

The delegated officer notes:

1. Testing of the soil materials used to construct the existing outdoor pens was not conducted as per the requirements of W4170/2005/1.
2. No information has been provided to demonstrate the standard to which the evaporation pond and farm dam have been constructed to.
3. A single sample of the material to be used in constructing the new covered pen floors has been tested as having a coefficient of permeability of  $1.52 \times 10^{-10}$  m/s, which complies with the National Guidelines.

## 2.3 Construction schedule

The applicant anticipates construction of the shed will take about 6 months, with operations to commence shortly after and complement the existing open-air feedlot.

## 2.4 Operational aspects

Purchased feeder cattle will be brought onto the premises and unloaded into the existing covered 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). All feed will be brought onto the premises and stored in silos, with a roller mill used to prepare the ration. About 5,000 tonnes or ration feed is produced within the commodity sheds at the site. Stock watering requirements will be sourced from existing groundwater bores, with about 7% of the annual requirement to be supplemented by rainwater harvested from the shed roof.

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.

### 2.4.1 Surface water management

#### Clean water diversion

The covered nature of the shed, in addition to upgradient diversion banks and channels to direct clean surface water away from the pens, will minimise the risk of surface water mixing or coming into direct contact with solid wastes (manure). Rainwater from the shed roof will be harvested and used within the feedlot for stock watering purposes.

The applicant proposes to construct a cut-off drain along the northern edge of the existing outdoor pens to divert clean surface water runoff away from the feedlot infrastructure. On the eastern side of the outdoor pens, the feed bunk and feed lane will be slightly elevated and will effectively prevent the ingress of surface water runoff into the pens.

### Effluent runoff and capture

The applicant expects that during the cooler months urine will be absorbed within the straw bedding and will evaporate during the warmer months. As such, the applicant does not expect there to be a wastewater stream generated from the covered pens.

The applicant advises the existing outdoor pens were constructed with a natural 3% slope to the west which facilitates the drainage of surface water runoff from the pens. The main catch drain to be constructed will capture this runoff and divert to the existing evaporation pond.

The composting pad will be positioned at the mouth of an existing farm dam, which will be used to contain surface runoff from the pad for evaporation.

### **2.4.2 Solid waste management**

A straw-based bedding system will be used to absorb the urine and manure generated within the covered pens, with three bales of straw added to each pen before the animals enter. An additional two bales will be added to each pen/week for the 12 weeks of each 'rotation' (about 26 bales/pen/rotation).

The covered pens will be cleaned after 6 to 8 weeks and then again at the completion of the 12-week rotation. The existing outdoor pens are cleaned every 12 weeks or as cattle leave the feedlot. The straw/manure product will be immediately applied to paddocks on the premises at the point of removal (i.e., no stockpiling).

The applicant has calculated an annual total solids (TS) harvest from the covered pens to be about 2,825 t/yr, based on a manure production of about 410 kg/SCU (2,525 t/yr) and about 300 t/yr of straw bedding material. Per 12-week rotation this equates to about 706 tonnes TS, or 88.5 tonnes TS per pen.

### Management of deceased animals

The applicant expects a mortality rate of about 0.5%, which based on three rotations of 3,068 animals (total combined capacity of the existing outdoor pens and covered pens) equates to about 46 animals per year. Dead animals will be transported from the pens to the compost pad for composting.

There will be daily inspections of the pens where mortalities will be removed to the compost pad on the same day, laid in windrows on a bed of straw material at least 600 mm thick and covered with a layer of manure at least 500 mm 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 wastewater to the catchment 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.

### **2.4.3 Manure utilisation**

The applicant owns about 5,500 ha of dryland cropping land within the local district which it uses to crop cereal grains, canola, lupins and hay. As the soils are low in soil organic matter (soil carbon) and other nutrients, the applicant proposes to spread the straw/manure product from the covered pens, dry manure from the outdoor pens 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 4.5 t/ha for the straw/manure product, 2.5 t/ha for dry manure and 1.0 t/ha for carcass compost for a grain wheat crop yielding 2.5 t/ha and a winter cereal hay crop yielding 4 t/ha.

Based on the annual TS harvest from the covered pens (930 t/yr dry straw/manure product), outdoor pens (337 t/yr dry manure) and annual carcass compost produced (3.5 t/yr), about 1,314 ha of land will be required to sustainably use the available nutrients.

#### DPIRD technical review

The Department of Primary Industries and Regional Development (DPIRD) has reviewed the proposed manure utilisation and cropping nutrient balance and advises the yearly application of manure/compost, dry manure and carcass compost are acceptable.

However, a soil monitoring program is recommended to verify the nutrients are being successfully removed from the system as per the cropping plan and to measure the amount of nutrients stored in the soil. The program should also include measuring the nutrient levels of the manure and soil that is spread on the paddocks to obtain actual nutrient levels, opposed to estimated values.

### 3. Infrastructure

**Table 1: Cattle feedlot infrastructure**

| Prescribed activity – category 1        |   |
|---|---|
| Cattle feedlot: full capacity 3,068 SCU |   |
| 1                                       | Covered feedlot pens – 8 pens with 1,540 SCU capacity                     |
| 2                                       | Outdoor feedlot pens – 6 pens with 1,068 SCU capacity                     |
| 3                                       | Evaporation pond for outdoor pens – 5,000 m <sup>3</sup> storage capacity |
| 4                                       | Compost pad – 270 m <sup>2</sup>  |
| 5                                       | Farm dam for compost pad – 2,000 m <sup>3</sup> storage capacity          |
| 6                                       | Rainwater holding tanks – 2 x 375 kL tanks                                |

#### 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, including but not limited to machinery movements, land application of synthetic fertilisers, paddock grazing of sheep and cattle, etc.; and
- vehicle (i.e. livestock truck) movements on private or public roads.

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.

### 4. Consultation

The application was referred to relevant public authorities and advertised for public comment on the department's website during June 2021. No public submissions were received in the timeframe specified.

#### 4.1 Public authorities

The Shire of Dowerin (shire) advised a development application to construct the covered feedlot pens was approved by council in April 2021, subject to conditions that require submission of a waste management plan in consultation with the neighbouring Shire of



Goomalling, a stormwater disposal plan and plan to minimise the risk of erosion and sedimentation during the works.

The approval notes a works approval and either licence or registration may be required by the department, although the department was not consulted as part of the shire's decision-making process.

DPIRD advises the proposed stocking rate for the covered pens is considered acceptable, however additional information would be required to assess the evaporation pond design against the national design standards.

The proposed nutrient application rates are also considered acceptable, subject to a soil monitoring program that verifies nutrient balance (see section 2.4.3). More detailed groundwater data would also be preferred, as the three nearby bores used to demonstrate depth to groundwater in the local area appear to be deeper production bores.

## **5. Location and siting**

### **5.1 Siting context**

The premises is located on farming land south-east of Goomalling, about 125 km north-east of Perth. It is located within the intensive land-use zone (ILZ) of the Avon River Basin catchment, which has been largely cleared of native vegetation for crop and pasture production in dryland agricultural systems.

The feedlot infrastructure is located within Lot 4666, at the corner of Ucarty Rd and Ucarty Rock Rd. This land title has a total area of 404 ha, of which about 40 ha is used for broad acre farming and will be used for spreading straw/manure and composted material. The applicant owns several other surrounding land holdings totalling 5,500 ha, which will also be used for spreading straw/manure and composted material, where required.

#### **5.1.1 Land use and sensitive receptors**

The premises and surrounding land have historically been used for extensive livestock grazing and grain production and as a result, are largely cleared with no significant remnant vegetation. A small wetland bounds the western and northern extents of the existing feedlot and comprises some native vegetation in degraded condition.

The premises is well separated from human sensitive receptors, with four farm dwellings located between 3.5 km and 5 km from the feedlot pens. The nearest town sites are Goomalling (16 km north-west) and Dowerin (20 km north).

The Eaton Nature Reserve borders the south-eastern corner of the premises, about 2.5 km from the feedlot pens. No other specified ecosystems or areas of high conservation value have been identified in proximity that may be directly impacted by the proposed activities.

#### **5.1.2 Climate**

The Goomalling area experiences a dry Mediterranean climate with hot dry summers and cool wet winters. Average annual rainfall is about 349 mm/yr, with most falling in the winter months during the passage of cold fronts and little or no rain during the summer months. Annual evaporation is about 2.1 m per year and exceeds rainfall for all months except July.

#### **5.1.3 Physiography**

The premises is located within the Avon Valley agricultural sub-region of the ILZ, which lies on the metamorphosed volcanic rocks of the Jimperding metamorphic belt in the western wheatbelt. The landscape has been incised by the Avon River and Toodyay Brook, forming undulating hills with rocky outcrops. Rivers and streams flow to the Swan River and ephemeral streams are often mildly saline, particularly towards the east and north (Galloway 2004).

#### 5.1.4 Soils and landscape

Soil landscape mapping (DPIRD 2021) indicates the premises and surrounds lie mostly within the Philips sandplain Soil-landscape Zone. This system is described as 'Gravelly pale deep and pale deep sands, yellow sandy earths and yellow deep sands'.

### 5.2 Groundwater

The premises is underlain by a fractured rock aquifer which forms part of the Combined – Fractured Rock West aquifer system east of the Darling Scarp.

The applicant has three groundwater production bores in proximity to the feedlot (closest being 400 m south-west), which are drilled to a depth of 20 mbgl and used for stock watering purposes. The closest DWER bores are located between 4.5 and 6.3 km from the feedlot and indicate depth to shallow groundwater in the winter months ranging from 1.4 to 2.3 mbgl, and quality ranging from 300 to 5,600 mg/L total dissolved solids.

### 5.3 Surface water

The Cunjardine River is located about 3.1 km north of the existing feedlot and flows adjacent to cropping land proposed for the spreading of straw/manure and compost from operations. It is a key tributary of the Mortlock River and Avon-Swan River system of high conservation value and has been identified as a priority waterway for foreshore assessment due to having high ecological value, social value and threatening processes (DoW 2008).

Several drainage lines flow through the premises, about 120 m north of the existing feedlot pens, and terminate in man-made dams. A small ephemeral salt lake is located about 300 m south-east of the existing pens.

### 5.4 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 overall feedlot capacity of both the existing outdoor pens and the proposed covered pens (3,080 SCU), the calculated separation distance to the nearest receptor, being a single rural or farm dwelling, is 1.3 km, which is well within the actual distance of 3.5 km. The calculated separation distance to the nearest town, being the medium-sized town of Goomalling (~600 persons), is 5.26 km, which also is well within the actual distance of about 16 km.

## 6. Risk assessment

### 6.1.1 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.

### 6.1.2 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.

### 6.1.3 Risk assessment table

The table below describes the risk events associated with the proposal consistent with the *Guideline: Risk Assessments* (DWER 2020). 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 <sup>1</sup>  | Likelihood rating <sup>1</sup>                                   | Risk <sup>1</sup>   | Reasoning  | Regulatory controls   |
|--|---|---|---|--|--|---|--|---|
| Source/<br>Activities  | Potential emissions   | Potential receptors, pathway and impact   | Applicant controls  |  |  |   |  |   |
| Construction works   |   |   |   |  |  |   |  |   |
| Construction of covered pens                                 | 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 (>3.5 km) | Adequate separation to nearby receptors (>3.5 km)   | Minimal impacts to amenity on local scale<br><b>Slight</b>                           | May only occur in exceptional circumstances<br><b>Rare</b>       | <b>Low</b><br>Acceptable, not subject to controls                       | The delegated officer considers there is sufficient separation in place (>3.5 km to nearest rural dwelling, >16 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><br>None specified.  |
| Time limited operations and full operations                  |   |   |   |  |  |   |  |   |
| Category 1: Cattle feedlot operations                        |   |   |   |  |  |   |  |   |
| Holding, feeding and watering of animals within covered pens | Nutrient-laden leachate (from manure, urine) accumulated in pens  | Seepage/infiltration causing contamination of shallow groundwater   | Pens constructed within a covered shed<br>Pens constructed with 300 mm thick compacted floors<br>Straw-based bedding system to absorb leachates | Low-level on-site impacts<br>Minimal off-site impacts on local scale<br><b>Minor</b> | Not likely to occur in most circumstances<br><b>Unlikely</b>     | <b>Medium</b><br>Acceptable, subject to regulatory controls             | The covered nature of the pens is expected to significantly minimise the volume of leachate generated from manure (urine, faeces, spilled feed, etc.), given it will not be exposed to rainfall runoff.<br><br>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: <ul style="list-style-type: none"><li>Pen and yard surfaces and cattle alleys must be constructed with minimum 300 mm thick compacted clay layers and tested to verify a permeability of 1x10<sup>-9</sup> m/s or less; and</li><li>External perimeter of the covered pens must be constructed with a minimum 150 mm high bund, to ensure any free liquids are contained and to prevent the ingress of surface water.</li></ul> The delegated officer considers the above controls will ensure the risk of groundwater contamination from feedlot activities is acceptable.  | <u>Works approval controls:</u> <ul style="list-style-type: none"><li>Pen surfaces must be constructed as per design plans, with testing of the construction materials to demonstrate compaction and density characteristics;</li><li>External perimeter bunds must be constructed</li></ul> <u>Licence controls:</u> <ul style="list-style-type: none"><li>Pen floors and bunding must be maintained to ensure integrity is sustained.</li></ul> |
|  | Odour, from animals within the shed and manure accumulated in feedlot pens                                  | Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (>3.5 km) | Stocking density 4.7 m <sup>2</sup> /SCU<br>Straw-based bedding system to absorb leachates<br>Pens cleaned out after every rotation             | Low level impacts to amenity on local scale<br><b>Minor</b>                          | Likely to occur only in exceptional circumstances<br><b>Rare</b> | <b>Low</b><br>Acceptable, based on applicant controls being implemented | Due to the nature of intensive feeding systems, there is an inherent risk of odour causing impacts to off-site receptors. An appropriate separation distance needs to be in place to minimise the potential for odour impacts.<br><br>The delegated officer considers the ‘s-factor’ formula, as outlined in the National Guidelines (MLA 2012a), to be an appropriate method for determining the minimum separation distances to nearby sensitive receptors.<br><br>S-factor calculations provided by the applicant, which have been verified by DWER as part of this assessment, indicate there is adequate separation to nearby sensitive receptors. This is also the case when considering cumulative impacts from the existing outdoor feedlot. The delegated officer is therefore satisfied that more complex air quality modelling/odour assessment is not warranted, and that there is an acceptable level of risk in terms of odour impacts to nearby receptors.<br><br>As the proposed applicant 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> <ul style="list-style-type: none"><li>Must operate covered pens with minimum stocking density of 4.7 m<sup>2</sup>/SCU;</li><li>Pens must be cleaned out after every rotation.</li></ul> <u>Licence controls:</u><br>As above.  |
|  | Noise, from animals and machinery movements   |   | Sufficient separation distance in place to nearby human receptors   | Minimal impacts to amenity on local scale<br><b>Slight</b>                           | Likely to occur only in exceptional circumstances<br><b>Rare</b> | <b>Low</b><br>Acceptable, not subject to controls                       | The delegated officer considers there is sufficient separation in place (>3.5 km to nearest rural dwelling, >16 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><br>None specified.<br><br><u>Licence controls:</u><br>None specified.   |
|  | Fugitive dust, from truck movements on gravel/unsealed roads  |   |   |  |  |   |  |   |

| Risk Event  |  |   |  | Consequence rating <sup>1</sup>   | Likelihood rating <sup>1</sup>                               | Risk <sup>1</sup>   | Reasoning  | Regulatory controls   |
|---|--|---|--|---|--|---|--|---|
| Source/<br>Activities   | Potential emissions  | Potential receptors, pathway and impact   | Applicant controls   |   |  |   |  |   |
| Composting of deceased animals  | Nutrient-laden leachate from compost windrows, mobilised by surface water runoff | Uncontrolled discharge, causing contamination of shallow groundwater  | Compost pad to be constructed with bunded hardstand that diverts surface water runoff to a holding pond  | Mid-level on-site impacts<br>Low-level off-site impacts on local scale<br><b>Moderate</b> | Not likely to occur in most circumstances<br><b>Unlikely</b> | <b>Medium</b><br>Acceptable, subject to regulatory controls             | The compost area will comprise a hardstand pad that slopes toward an existing farm dam, to ensure all surface water runoff is contained and diverted to the dam.<br><br>The delegated officer considers the above controls will ensure the risk of uncontrolled discharges from the compost pad, resulting in soil or groundwater contamination, is acceptable.<br><br>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><br>- Compost pad must be constructed as bunded hardstand within a controlled drainage area;<br>- Area must be sloped to facilitate drainage to the existing farm dam.<br><br><u>Licence controls:</u><br>- Compost pad must be maintained to ensure all contaminated surface water runoff is fully contained within.  |
|   | Odour, from composting operations, etc.  | Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (>3.5 km)   | Composting dead animals in accordance with National Code of Practice   | Low level impacts to amenity on local scale<br><b>Minor</b>                               | Not likely to occur in most circumstances<br><b>Unlikely</b> | <b>Medium</b><br>Acceptable, subject to regulatory controls             | The delegated officer considers there is sufficient separation in place (>6 km to nearest rural dwelling, >28 km to nearest town). Providing deceased animals are handled, stockpiled and composted in accordance with the National Code of Practice, the delegated officer considers it unlikely that odour from composting operations will significantly impact on the amenity or health of off-site human receptors.<br><br>This also assumes that only low risk feedstocks are brought onto the premises for incorporating into the composting process, such as green waste, untreated timber and natural fibrous organics, which all have low odour potential.<br><br>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><br>- Optimum conditions for rapid composting, as per National Code of Practice;<br>- Only low risk feedstocks brought onto the premises for incorporating into composting process<br><br><u>Licence controls:</u><br>As above.  |
| Spreading of straw/manure and composted material over a minimum of 1,314 ha of suitable dryland cropping land | Leaching or runoff of nutrients from spread straw/manure and composted material  | Contamination of soil, causing contamination of shallow groundwater<br>Runoff from spread areas causing contamination of Cunjardine River<br>Soil acidification<br>Excessive build-up of soil P | Straw/manure from covered pens) to be spread immediately after removal (about every 12 weeks) at application of 4.5 t/ha<br>Manure from outdoor pens to be spread immediately after removal (about every 12 weeks) at application of 2.5 t/ha<br>Carcass compost to be spread about every 6 months at application of 1.0 t/ha<br><br>Waste will not be spread within 25 m of the property boundary and dams and 50 m from water courses and drainage lines | Mid-level on-site impacts<br><b>Moderate</b>  | Could occur at some time<br><b>Possible</b>                  | <b>Medium</b><br>Acceptable, subject to regulatory controls             | The delegated officer has considered the advice provided by DPIRD on the applicant's proposal to spread composted manure on the premises (see section 2.4) and has determined the yearly application of 4.5 t/ha for the straw/manure product, 2.5 t/ha for dry manure and 1.0 t/ha for carcass compost over a minimum of 1,314 ha of cropping land is the most appropriate method to maintain the soil's capacity to absorb nutrients and to limit water repellence.<br><br>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.<br><br>In addition, the delegated officer considers the recommendation by DPIRD for soil testing before and after the application of manure has merit, to allow the ability to track movement of P and other nutrients down the soil profile and indicate if there is leaching at greater depth. | <u>Works approval controls:</u><br>- Application rates for each waste type specified;<br>- Wastes must only be spread across specified waste utilisation areas, with even distribution and only onto areas growing crops or pasture;<br>- Must conduct soil testing of nutrients, before and after first application;<br>- Soil testing must be conducted at regular depths down the soil profile;<br><br><u>Licence controls:</u><br>As above. |
|   | Odour, from spread manure / compost  | Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors (>3.5 km)   | No stockpiling of manure, direct spread onto land  | Minimal impacts to amenity on local scale<br><b>Slight</b>                                | Not likely to occur in most circumstances<br><b>Unlikely</b> | <b>Low</b><br>Acceptable, based on applicant controls being implemented | The delegated officer considers there is sufficient separation in place (>3.5 km to nearest rural dwelling, >16 km to nearest town). It is preferable, but not essential, if manure and compost can be incorporated into cultivation as soon as possible after application, to further reduce the risk of odour. This requirement has not been imposed on the works approval at this stage, however this is an option should manure spreading activities cause off-site impacts during operations.   | <u>Works approval controls:</u><br>Nil.<br><br><u>Licence controls:</u><br>As above.  |

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

## 7. Decision

The delegated officer has determined the proposal to construct and operate a set of covered feedlot pens on the premises, with an assessed design capacity of 1,540 SCUs, does not pose an unacceptable risk of impacts to on- and off-site receptors. This determination is based on the following:

- the covered nature of the proposed pens will generate little direct stormwater runoff and thereby minimise the risk of surface water mixing or coming into direct contact with solid wastes;
- there being sufficient separation to nearby (human) sensitive receptors, as determined by s-factor calculations (which are likely to be relatively conservative, given the straw-based bedding system);
- the proposed stocking density of 4.7 m<sup>2</sup>/SCU, which is greater than the minimum industry standard of 2.5 m<sup>2</sup>/SCU for shedded cattle;
- spoilt straw/manure bedding to be removed after each rotation, for immediate spreading (i.e., no stockpiling);
- carcass composting to be conducted on a suitably constructed composting pad within a controlled drainage area, with compost to be prepared for spreading on the premises; and
- finished compost and straw/manure being spread at acceptable application rates over the premises.

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

The delegated officer notes that permeability testing of the pen floors of the existing outdoor feedlot was not conducted as per the requirements of W4170/2005/1 and no information has been provided to demonstrate the standard to which the pens were constructed. Additionally, no information has been provided to demonstrate the standard to which the existing evaporation pond and farm dam have been constructed to. However, according to the applicant soils similar to that obtained for permeability testing for the new covered pens were used in the construction of these aspects, therefore the delegated officer is satisfied there is an acceptable level of protection to surface water and groundwater.

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.

### 7.1.1 Works approval and licence

Works Approval W6554/2021/1 that accompanies this report authorises construction and time-limited operations of the covered pens 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).

It is noted the premises is an existing prescribed premises and holds a valid registration (R1869/2006/1) under category 68: cattle feedlot of the EP Regulations, being a category that falls within Part 2 of Schedule 1 of the EP Regulations. However, on review the delegated officer considers the existing premises has previously been categorised on an incorrect interpretation of the premises boundary, which up until now has not included the manure utilisation areas. When considering these areas within the premises, which include several defined watercourses, the premises more accurately meets the description of a category 1: cattle feedlot.

Based on this, a licence is required to authorise emissions associated with the ongoing operation of the existing feedlot, including the covered pens following construction. 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.

### 7.1.2 Applicant comments on draft decision

The applicant was provided with drafts of the works approval and this report in May 2022 and sought clarification on the proposed requirements to a) incorporate manure into the soil, given the lack of nearby sensitive receptors, and b) to conduct soil monitoring, given the proposed nutrient application rates will be equal to or less than crop requirements.

On review, the delegated officer acknowledges that although incorporation of manure into the soil is preferred practice (to reduce the likelihood of odour issues), it should not be made a requirement when considering the actual separation to receptors in this case. As such, this requirement has been removed from the works approval; however, the delegated officer reserves the right to reconsider this as a control, should odour issues arise from future operations.

Regarding the requirement to conduct soil sampling, the delegated officer has considered advice from DPIRD who recommended a soil monitoring program be implemented to verify that nutrients are being removed from the system as estimated in the proposed cropping plan, through actual measurements. As such, the requirement for soil testing will remain in the works approval and licence, however this can be revisited after the first few cropping rotations where this requirement can be wound back or removed if results are as expected and are confirming low risk.

## 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.

**Caron Goodbourn**  
**MANAGER, PROCESS INDUSTRIES**  
**REGULATORY SERVICES**

*An officer delegated by the CEO under section 20 of the EP Act*

## 8. References

1. AUS-MEAT Limited (AUS-MEAT) 2018, *National Feedlot Accreditation Scheme: Rules and standards of accreditation*. Handbook, September 2018.
2. Department of Primary Industries and Regional Development (DPIRD) 2021, Soil Landscape Mapping (DPIRD-027). Accessed from [www.data.wa.gov.au](http://www.data.wa.gov.au).
3. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
5. Department of Water (DoW) 2008, *Priority tributaries of the Avon River basin: a process to prioritise tributaries for condition assessment*. Water resource management series, Report no. WRM 51, November 2008.
6. Galloway, P.D. 2004, *Agricultural sub-regions of the Avon River basin*. Department of Agriculture and Food, Western Australia, Perth. Report 284.

7. MLA 2012a, *National Guidelines for Beef Cattle Feedlots in Australia*, 2<sup>nd</sup> Ed. Meat & Livestock Australia Limited.
8. MLA 2012b, *National Beef Cattle Feedlot Environmental Code of Practice*, 2<sup>nd</sup> Ed. Meat & Livestock Australia Limited.