



## Application for licence

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

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<b>Licence number</b>	L9384/2023/1
<b>Applicant</b>	Ucarty Holdings Pty Ltd
<b>ACN</b>	009 066 479
<b>DWER file number</b>	DER2023/000217
<b>Premises</b>	Ucarty Cattle Feedlot Ucarty Road UCARTY WA 6462
<b>Date of report</b>	18 May 2023
<b>Status of report</b>	Final

# 1. Purpose and scope of assessment

Ucarty Holdings Pty Ltd (the applicant) is seeking to transition from time-limited to full operations at its upgraded cattle feedlot near Dowerin. An application to licence the facility was submitted under Division 3 Part V of the *Environmental Protection Act 1986* (EP Act) on 26 March 2023.

This report sets out the delegated officer's assessment of potential risk events arising from emissions and discharges that will be generated during feedlot activities on the premises.

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

## 2. Application details

### 2.1 Overview of existing premises

'Ucarty feedlot' is an existing cattle feedlot that has been operating since 2006 in the small rural location of Ucarty, about 125 km northeast of Perth.

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), a voluntary, industry-sponsored quality assurance scheme that requires the operator to have in place all relevant state and local government approvals to operate.

A new set of covered feedlots pens, with a design capacity of 1,540 standard cattle units (SCUs), was recently constructed under W6554/2022/1 and is being operated in conjunction with the existing pens, under time limited provisions.

This application seeks a licence to replace the existing registration issued for the premises (R1869/2006/1). 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 – (a) situated less than 100 metres from a watercourse; and (b) on which the number of cattle per hectare exceeds 50.	Not more than 3,068 animals Covered pens – 2,000 animals (1,540 SCUs equivalent) Outdoor pens – 1,068 animals (820 SCUs equivalent)

#### 2.1.1 Background

W4170 was granted in 2005 for construction of a 1,500 head cattle feedlot at the premises. It was only partially constructed before a registration was issued (R1869/2006/1) to allow the commencement of operations. Construction compliance documentation was not submitted prior to the works approval expiring in 2008. Construction deviated from the original plans, with only 6 of 12 planned pens being completed with a compacted base. A further 8 larger backgrounding pens were later established (without a compacted base) and formed part of the feedlot complex.

W6554 was granted in 2022 for construction of a set of covered (roofed) feedlot pens with a holding capacity of 2,000 head. The covered pens replace the 8 backgrounding pens, which have now been discontinued.

## 2.1.2 Environmental compliance

Two environmental compliance reports (ECRs) were submitted at the completion of key infrastructure milestones:

- ECR 1 (submitted September 2022) – Covered feedlot pens. Full compliance declared for all requirements, no deviations or non-conformances noted. As-constructed plans provided, including construction report and results of materials testing;
- ECR 2 (submitted February 2023) – Outdoor feedlot main catch drain, composting pad and containment dam. Full compliance declared for all requirements, no deviations or non-conformances noted. As-constructed plans provided, including construction report and results of materials testing.

The department has reviewed the ECRs and is satisfied feedlot infrastructure has been constructed in accordance with the requirements specified in the works approval and deviations from requirements have not been identified.

## 2.1.3 Time limited operations

W6554 provides for time limited operations of the new covered feedlot pens, following submission of the ECR for that infrastructure.

Stocking of the covered pens commenced in September 2022, following completion of the shed.

## 2.2 Feedlot design and layout

The feedlot design and layout has been assessed as meeting the *National Beef Cattle Feedlot Environmental Code of Practice* (MLA 2012a) (the Code).

### New covered pens

The new covered pens 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 has been constructed using soils brought in from elsewhere on the premises. The pad was constructed of 6 x 50 mm compacted layers, to form a thickness of about 300 mm. The bottom 200 mm was 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 was tested and confirmed as having a coefficient of permeability of  $1.52 \times 10^{-10}$  m/s.

The floor surface has been 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. A straw-based bedding system is being used to manage the urine and manure generated (like a deep-litter piggery).

The shed has been orientated in a north-south alignment, consistent with the Code, with feed bunks located on the east and west boundaries of the shed. Cattle enter the shed via a laneway that runs the length of the western boundary.

The covered pens are unlikely to generate a wastewater stream that requires managing, and therefore infrastructure such as drains and ponds for the new covered pens have not been constructed.

### 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 backgrounding 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 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 at the maximum extent of the stocking density range of 9 to 25 m<sup>2</sup>/SCU required for NFAS accredited feedlots (AUS-MEAT 2018).

#### Evaporation pond and main drain

The applicant has constructed a main catch drain along the western edge of the existing outdoor pens to divert effluent runoff from the outdoor pens to the existing evaporation pond. The catch drain has been constructed of the same soils used to construct the floor surface of the covered pens.

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 has constructed a discrete pad about 2.5 km away from the feedlot infrastructure for the purpose of composting deceased animals. The pad was 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 is positioned at the mouth of an existing farm dam, which will 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).

## **2.3 Operational aspects**

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

Animals initially start on high fibre rations, prior to transitioning over 3 weeks to a nutrient-dense finisher ration. Rations are prepared daily according to the appetite of the pens lots on feed.

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

### **2.3.1 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, minimises the risk of surface water mixing or coming into direct contact with solid wastes (manure). Rainwater from the shed roof is harvested and used within the feedlot to supplement stock watering.

The applicant has constructed 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 are slightly elevated, which effectively prevents 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 has been positioned at the mouth of an existing farm dam and used to contain surface runoff from the pad for evaporation.

### **2.3.2 Manure management**

A straw-based bedding system is being 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 are added to each pen/week for the 12 weeks of each 'rotation' (about 26 bales/pen/rotation).

The covered pens are 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 is 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.

### 2.3.3 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.

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 (outside of manure utilisation areas), etc.; and
- vehicle (i.e. livestock truck) movements on private or public roads.

The licence 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 April 2023. 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.

DPIRD made no formal comment, apart from noting the completed works and upgrades appear to be in line with the Code of Practice.

## **5. Location and siting**

### **5.1 Siting context**

The premises is located on farming land south-west of Dowerin, 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 (19 km north-east).

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 Dowerin 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/ Activities	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
<b>Category 1: Cattle feedlot operations</b>								
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 Pens constructed with 300 mm thick compacted floors Straw-based bedding system to absorb leachates	Low-level on-site impacts Minimal off-site impacts on local scale <b>Minor</b>	Likely to occur only in exceptional circumstances <b>Rare</b>	<b>Low</b> Acceptable, based on applicant controls being implemented	The covered nature of the pens significantly minimises the volume of leachate generated from manure (urine, faeces, spilled feed, etc.), given it is not exposed to rainfall runoff. To further protect the underlying groundwater resource, the base of the covered pens has been constructed with a compacted hardstand that complies with a permeability of at least $1 \times 10^{-9}$ m/s. The delegated officer considers these controls will ensure the risk of groundwater contamination from ongoing feedlot activities is acceptable, providing an appropriate surcharge layer is maintained.	- Pen floors and bunding must be maintained to ensure integrity is sustained.
	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 Straw-based bedding system to absorb leachates Pens cleaned out after every rotation	Low level impacts to amenity on local scale <b>Minor</b>	Likely to occur only in exceptional circumstances <b>Rare</b>	<b>Low</b> 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). Providing the stocking density in pens does not exceed the assessed density (4.7 m <sup>2</sup> /SCU) and spent bedding is removed from pens at the end of each rotation (~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.	- Must operate covered pens with minimum stocking density of 4.7 m <sup>2</sup> /SCU; - Pens must be cleaned out after every rotation
	Noise, from animals and machinery movements		Sufficient separation distance in place to nearby human receptors	Minimal impacts to amenity on local scale <b>Slight</b>	Likely to occur only in exceptional circumstances <b>Rare</b>	<b>Low</b> 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.	None specified.
	Fugitive dust, from truck movements on gravel/unsealed roads							
Holding, feeding and watering of animals within outdoor pens	Nutrient-laden leachate from manure, urine, mobilised by surface water runoff	Seepage/infiltration, causing contamination of shallow groundwater	Pens and main catch drain constructed with 300 mm compacted hardstand	Low-level on-site impacts <b>Minor</b>	Likely to occur only in exceptional circumstances <b>Rare</b>	<b>Low</b> Acceptable, based on applicant controls being implemented	To protect the underlying groundwater resource, the outdoor pens, main catch drain and evaporation pond floor have been constructed with a compacted hardstand that complies with a permeability of at least $1 \times 10^{-9}$ m/s. The delegated officer considers these controls will ensure the risk of groundwater contamination from ongoing feedlot activities is acceptable, providing an appropriate surcharge layer is maintained.	- Infrastructure design and operational requirements specified in infrastructure table - All infrastructure within controlled drainage area must be maintained to ensure integrity is sustained
		Uncontrolled discharge, causing soil contamination or groundwater contamination	Feedlot infrastructure constructed within a controlled drainage area, comprising a bunded hardstand that diverts surface water runoff to an evaporation pond	Low-level on-site impacts <b>Minor</b>	Likely to occur only in exceptional circumstances <b>Rare</b>	<b>Low</b> Acceptable, based on applicant controls being implemented	Key feedlot infrastructure is located within a CDA, in which all contaminated or potentially contaminated surface water runoff is contained and diverted to an evaporation pond. The delegated officer considers the above controls ensure the risk of uncontrolled discharges, resulting in soil or groundwater contamination, is acceptable.	- Controlled drainage area must be maintained to ensure all contaminated surface water runoff is fully contained within
		Overtopping of evaporation pond, causing soil contamination or groundwater contamination	Pond designed with sufficient storage capacity during a 95 <sup>th</sup> percentile rainfall year	Low-level on-site impacts <b>Minor</b>	Likely to occur only in exceptional circumstances <b>Rare</b>	<b>Low</b> Acceptable, based on applicant controls being implemented	The evaporation pond has been constructed with a storage capacity that exceeds the estimated runoff from within the CDA. The annual water balance determined by the applicant indicates the pond is sufficiently sized to ensure the frequency of spill events are less than an average of one in 20 years, assuming that most of the stored effluent is evaporated during the spring and summer period and the pond is empty at the start of each winter season.	- Operational freeboard requirement of 0.5 m must be maintained on the evaporation pond
	Odour, from manure accumulated in feedlot pens and catch drains	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors	Stocking density 9m <sup>2</sup> /SCU Pens and main catch drain cleaned every 12 weeks	Low level impacts to amenity on local scale <b>Minor</b>	Likely to occur only in exceptional circumstances <b>Rare</b>	<b>Low</b> 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). Providing the stocking density in pens does not exceed the assessed density (9 m <sup>2</sup> /SCU) and manure is removed from pens before it exceeds 50 mm, the delegated officer considers it unlikely that odour from feedlot operations will significantly impact on the amenity or health of off-site human receptors.	- Stocking density must not exceed 9 m <sup>2</sup> /SCU in pens; - Pens must be cleaned to ensure manure build up does not exceed 50 mm

Risk Event				Consequence rating <sup>1</sup>	Likelihood rating <sup>1</sup>	Risk <sup>1</sup>	Reasoning	Regulatory controls
Source/ Activities	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
	Odour, from evaporation ponds	(>3.5 km)	Pens and main catch drain cleaned every 12 weeks to reduce amount of manure reaching pond	Low level impacts to amenity on local scale <b>Minor</b>	Likely to occur only in exceptional circumstances <b>Rare</b>	<b>Low</b> 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), 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.	- Main catch drain must be cleaned of solids to ensure runoff is able to flow freely to the pond
	Noise and dust, from animals and machinery movements		Sufficient separation distance in place to nearby human receptors	Minimal impacts to amenity on local scale <b>Slight</b>	Likely to occur only in exceptional circumstances <b>Rare</b>			<b>Low</b> Acceptable, not subject to 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 Low-level off-site impacts on local scale <b>Moderate</b>	Not likely to occur in most circumstances <b>Unlikely</b>	<b>Medium</b> Acceptable, subject to regulatory controls	The compost area comprises a hardstand pad that slopes toward an existing farm dam, to ensure all surface water runoff is contained and diverted to the dam. The delegated officer considers the above controls will ensure the risk of uncontrolled discharges, resulting in soil or groundwater contamination, is acceptable.	- 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 the Code	Low level impacts to amenity on local scale <b>Minor</b>	Not likely to occur in most circumstances <b>Unlikely</b>			The delegated officer considers there is sufficient separation in place (>3.5 km to nearest rural dwelling, >16 km to nearest town). Providing deceased animals are handled, stockpiled and composted in accordance with the Code, the delegated officer considers it unlikely that odour from composting operations will significantly impact on the amenity or health of off-site human receptors. 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. Provision will also be included within the licence for the option of removing deceased animals from the premises to a licensed composting facility.
Spreading of straw/manure, dry 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 Runoff from spread areas causing contamination of Cunjardine River Soil acidification 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 Manure from outdoor pens to be spread immediately after removal (about every 12 weeks) at application of 2.5 t/ha Carcass compost to be spread about every 6 months at application of 1.0 t/ha 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 <b>Moderate</b>	Could occur at some time <b>Possible</b>	<b>Medium</b> 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. 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. 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.	- Application rates for each waste type specified; - Wastes must only be spread across specified waste 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;
	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 <b>Slight</b>	Not likely to occur in most circumstances <b>Unlikely</b>			<b>Low</b> Acceptable, based on applicant controls being implemented

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 operate the Ucarty cattle feedlot complex, with a set of covered pens and outdoor pens and an assessed combined design capacity of 3,068 animals (2,360 SCUs equivalent), does not pose an unacceptable risk of impacts to public health or the environment. This determination is based on the following:

- being located in a climate with high annual moisture deficit, which lowers the overall risk of environmental impacts commonly associated with wet conditions – the covered nature of the covered pens further minimises the risk of surface water mixing or coming into direct contact with solid wastes;
- the feedlot complex being located on priority agricultural land and well separated from populated areas and nearby (human) sensitive receptors;
- 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 of the covered pens);
- the stocking density of 4.7 m<sup>2</sup>/SCU for the covered pens, which is greater than the minimum industry standard of 2.5 m<sup>2</sup>/SCU for shedded cattle;
- spent straw/manure bedding and manure to be removed after each rotation, for immediate spreading (i.e., no stockpiling);
- carcass composting being 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.

In addition, the applicant proposes to conduct soil testing on a biannual basis, to provide assurance that solid waste spreading is acceptable and sustainable.

The delegated officer is satisfied the above controls and monitoring lower the overall risk profile of the premises and are critical for maintaining an acceptable level of risk of impacts during operations; as such they will be imposed on the licence as infrastructure controls.

### Applicant comments

Licence L9384/2023/1 that accompanies this report authorises emissions and discharges from ongoing operations of the existing outdoor pens and newly constructed covered pens (combined 2,360 SCU capacity). The conditions in the licence, as outlined in the above risk table, have been determined in accordance with the *Guideline: Setting Conditions* (DWER 2020).

The applicant was provided with drafts of the licence and this report on 27 April 2023 and did not make any additional comments.

## Conclusion

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

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

## References

1. 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. DER 2016, *Guidance Statement: Licence duration*, Perth, Western Australia.
5. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
6. 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.
7. Galloway, P.D. 2004, *Agricultural sub-regions of the Avon River basin*. Department of Agriculture and Food, Western Australia, Perth. Report 284.
8. MLA 2012, *National Beef Cattle Feedlot Environmental Code of Practice, 2<sup>nd</sup> Ed.* Meat & Livestock Australia Limited.