



Application for Licence

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	L9061/2017/1
Applicant	Kalimpa Park Pty Ltd
ACN	615 703 574
File Number	DER2017/000560
Premises	Erim Downs Live Export Depot and Feedlot Facility 19094 Brand Hwy WARRADARGE WA 6518 Legal description - Lot 10804 on Deposited Plan 210800 Certificate of Title Volume 1672 Folio 678
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1. Definitions of terms and acronyms

In this Decision Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Applicant	Kalimpa Park Pty Ltd
ARI	means the Average Recurrence Interval, and defined as the average, or expected, value of the periods between exceedances of a given rainfall total accumulated over a given duration
AS 1289.6.7.1-2001	means the Australian Standard AS 1289.6.7.1 Methods of testing soils for engineering purposes – Soil strength and consolidation tests – Determination of permeability of a soil
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
Cattle Feedlot Guidelines	refers to both the <i>National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition)</i> and the <i>National Beef Cattle Feedlot Environmental Code of Practice (2nd Edition)</i>
Delegated Officer	an officer under section 20 of the EP Act.
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the <i>Public Sector Management Act 1994</i> and is responsible for the administration of the <i>Environmental Protection Act 1986</i> along with other legislation.
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
Feedlot / Feedlot Activity Area	refers to the area defined by the boundary shown in Figure 2, and in the issued Licence in Attachment 1, including all the feedlot infrastructure within that defined boundary.
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Issued Licence
Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>
SCU	Standard Cattle Unit
Standard Cattle Unit	animal of 600 kilograms live weight
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>
WQPN 22	Water Quality Protection Note 22: Irrigation with nutrient-rich wastewater, Department of Water, WQPN 22, July 2008

2. Purpose and scope of assessment

Kalimpa Park Pty Ltd (the Applicant) lodged an application for a concurrent Works Approval and Licence/Registration (the Application) on 22 March 2017 to construct a cattle feedlot and operate it as both a cattle feedlot and a live export depot at Lot 10804 on the Brand Highway, Warradarge (the Premises). The Premises are also known as Erim Downs.

At the time the application was lodged, construction of the feedlot had commenced and as such, DWER declined to deal with the works approval application.

The Decision Report presents an assessment of the licence application. It examines the environmental and public health risks from emissions and discharges from the Premises during operation of the facility.

The assessment and decisions that follow relate to assessment of the facility as a cattle feedlot capable of housing 12,000 SCU on a consistent and persistent basis. Utilising a portion of the feedlot to assemble cattle for live export does not present additional matters for assessment or decision making on the application and does not alter the plant and equipment to be built on the feedlot.

2.1 Application details

Documents submitted during the assessment process are listed below in Table 2.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
Application Form completed as a Concurrent Works Approval and Licence/Registration application	22 March 2017
Various attachments (See Appendix 1: Key Documents)	
Department of Environment Regulation – Further Information Required Kalimpa Erim Downs Feedlot (Applicant response)	20 May 2017
Various attachments (See Appendix 1: Key Documents)	
Further information update package (Revised Application)	20 September 2017

3. Background

The Applicant has applied for a licence to operate a cattle feedlot with a maximum holding capacity of 12,000 head of cattle, with a potential capacity equivalent to 12,000 SCU. Additionally the applicant has applied to periodically operate a portion of the cattle feedlot as a live export depot classified as a Category 55 activity (Livestock saleyard or holding pen: premises on which live animals are held pending their sale, shipment or slaughter), which requires the occupier to hold an EP Act Licence.

The feedlot has been located within a portion of the Premises, known as Erim Downs, as shown in Figure 1.

Table 3 lists the Prescribed Premises categories that have been applied for.

Table 3: Prescribed Premises Categories applied for

Classification of Premises	Description	Assessed maximum holding capacity
Category 55	Livestock saleyard or holding pen: premises on which live animals are held pending their sale, shipment or slaughter	12,000 SCU at any one time
Category 68	Cattle Feedlot: premises on which the watering and feeding of cattle occurs, being premises – (a) Situated 100 metres or more from a watercourse; and (b) On which the number of cattle per hectare exceeds 50.	

4. Overview of Premises

4.1 Operational aspects

Lot 10804 (the Premises) occupies a total area of 1,970 hectares. The Feedlot Activity Area occupies approximately 50 hectares within the north-east corner of the Premises, accessed from Coorow-Greenhead Road. The Brand Highway is located approximately 2.9 kilometres west of the Feedlot.

The Feedlot includes:

- 40 pens (3,000m² each) in two separated parallel series of 20 pens, including drainage channels, laneways, feed and water troughs;
- a weighbridge;
- a manure stockpile and carcass composting area;
- a feed storage and preparation facility;
- induction (livestock handling) yards;
- a sedimentation basin;
- holding ponds (primary and secondary ponds/dams);
- perimeter bunds and drainage channels to contain, capture and convey contaminated stormwater runoff from the manure, feed storage and milling and induction yard hardstands to a dam; and
- a graded bank and drain upslope of the feedlot to prevent ingress of clean stormwater.

The Applicant intends to operate the facility mostly between January and August primarily as a feedlot, grain feeding cattle for 70 -100 days (up to 18,000 head per year). Cattle will enter the feedlot at around 300kg and exit at a live weight of about 475kg.

Cattle for live export will be processed through the feedlot from around March to October each year, with cattle spending up to 25 days in the pens transitioning to pellet feed, prior to transport for embarkation from either the Geraldton or Fremantle ports (up to 36,000 head per year). The live weight of cattle held in preparation for live export will vary, but is expected to average 350kg.

Cereal grains, lupins, cereal hay/straw and pellet feed will be imported to the Premises, processed as required by the feed mill, then stored prior to use. Some cereal hay/straw will also be grown and cropped on available land within the Premises and used for cattle feed.

The pens may be stocked up to a maximum density of 10m² per SCU, allowing for up to 12,000 SCU to be held at any one time.

The Applicant proposes to apply effluent from the manure and feed pad runoff dam and the two effluent storage dams to the roads, laneways and pens for dust suppression, using a water truck.

Groundwater is to be extracted under licence from an existing bore within the Premises, located approximately 2.9km SW of the Feedlot Facility and pumped to the water storage tanks located at the southern end of the feedlot.

Cattle arrive at and depart the site by truck. Along with feed deliveries, maximum truck movements are estimated to be up to 51 per week during the peak operational month of March. The feedlot will operate 24/7, 365 days of the year.

4.2 Waste and waste management

The Applicant has proposed that the feedlot will generate and manage wastes as outlined in Table 4 below.

Table 4: Waste and waste management

Waste Type	Source	Management	Disposal
Manure & spilt feed	Feedlot pens and stock holding /induction yards	Periodically removed and temporarily stored on manure storage pad prior to application to land	Land (on-site and off-site disposal to land)
Wastewater (effluent)	from pens	Fully contained within drain structures, sedimentation basin and wastewater holding ponds x 2	Evaporation
	from feed pad and stockyards	Fully contained holding pond/dam	
	from manure pad		Evaporation
Pond/dam sludge	Sedimentation basin, effluent holding ponds (2) and runoff dam	Periodically removed to manure pad, dried and stockpiled prior to application to land	Land
Deceased animals and related materials	Feedlot pens and stock/induction yards	Composted on manure storage pad	Land
General wastes and other related wastes	Various	Periodically transferred to off-site landfill	Landfill

4.2.1 Solid waste – manure storage pad

Manure and spoilt feed wastes periodically collected from the pens, cattle lanes and yards is to be transferred to the manure storage pad for drying and temporary storage in windrows. Windrows will be regularly turned to aerate the stockpiles and facilitate breakdown of the manure prior to annual spreading between April to June to re-use areas within the Premises boundary. All temporarily stored manure in excess of application to land restrictions will be removed from the Premises.

Similarly sludge that accumulates in the sedimentation basin and the two effluent holding ponds will be removed annually in the summer months and transferred to the manure storage pad for drying and temporary storage in windrows prior to being disposed of off-site. Sludge from the dam capturing contaminated runoff from the manure storage area, induction yards and feed pad will also be periodically removed as required and treated as described above.

4.2.2 Waste applications to land

The Applicant is proposing to apply manure and composted carcasses to existing cleared areas (re-use areas) within the Premises as a partial fertilizer replacement. The proposed application rate is 9.5 m³ per hectare between the months of April to June. Harvested cereal and/or hay crops will subsequently be used as part of the feed supply for the feedlot.

Table 5 below details the manure production, application and utilisation estimates as provided by the Applicant.

Table 5: Applicant’s estimates of annual manure production and uptake by cereal hay crops

ERIM DOWNS FEEDLOT - Manure Production, Application and Utilization											
										19-May-17	
Manure Production											
Cattle Class	Number	Time on Feed	Live Weight	Manure Production				Total	Annual	Source	
	hd	days	kg	%	kg WM/hd/d	WM %	kg DM/hd/d	kg DM/hd	t DM		
Live Export Cattle	36000	25	350.0	5.8	20.3	90	2.03	50.8	1827	1	
Grainfed Yearlings	18000	100	387.5	5.8	22	90	2.25	224.8	4046		
TOTAL	54000								5873		
										%	
Manure Removed From Pens			(need to maintain manure interface with pen clay liner of 50 cm)						80	2	
										t DM	
										4698	
Manure Utilization		Application Rate	Moisture	Density	Rate	Rate	Area Required				
		m3/ha	%	kg/m3	kg/ha	kgDM/ha	ha				
		9.5	30	440	4180	2926	1606				
							3				
Nutrients Applied		Rate	Nitrogen	Phosphorus	Potassium	N	P	K			
		kgDM/ha	%	%	%	kg/ha	kg/ha	kg/ha			
		2926	2.2	0.8	2.3	64	23	67	(to be verified by analysis) 2		
Nutrient Utilization		Nutrients Removed									
Crop	Yield	N	P	K	N	P	K				
	t/ha	kg/t	kg/t	kg/t	kg/ha	kg/ha	kg/ha				
Cereal Hay	9	20	2	12	180	18	108	3			
Nutrient Surplus/Deficit					-116	5	-41				

The ‘Beef cattle feedlots: waste management and utilisation’ publication (Meat and Livestock Australia, September 2015) provides the typical nutrient composition of aged beef feedlot manure as detailed in Table 6 below.

Table 6: Typical nutrient composition of types of manure

Parameter	Pen	Aged	Compost
Dry matter (%)	74	63	74
Total nitrogen (% db)	2.5	2.2	2.1
Total phosphorus (% db)	1.0	0.8	1.3
Potassium (% db)	1.9	1.9	2.5
Sodium (% db)	0.3	0.3	0.4
Sulfur (% db)	0.4	0.5	0.5
Zinc (mg/kg db)	280	220	254

The Applicant notes that Erim Downs has a total of 1,610 hectares of cleared land. However, the areas within the Premises proposed for the application of aged manure and growing of cereal hay crops have not been specifically defined, and, given the presence of the Warradarge Creek drainage line running north to south through the western boundary of the Premises and other creek drainage lines within the Premises, the Delegated Officer considers that not all of the estimated 1610 hectares of cleared land will be suitable for cropping and the application of aged manure.

With respect to phosphorus uptake and the potential for the excessive buildup of phosphorus, the Applicant had stated that the soils on Erim Downs are acid (4.5 to 5.5 pH) and have a relatively high phosphorus buffering index. However, this is based on a general understanding

of regional soil types and properties, rather than being based on soil test results specific to the Premises. The Applicant proposes to monitor nutrient levels through annual soil testing to ensure that manure application rates do not cause excessive build-up of phosphorus and that in the event that excessive phosphorus build-up issues were to be identified, then excess manure will be removed off-site.

The Cattle Feedlot Guidelines note that lengthy stockpiling reduces the total dry matter content of manure by about 35%. For a feedlot with an interface layer, as proposed by the Applicant, the aged material production is expected to be around 0.35t/SCU/year (total mass). Therefore, the Delegated Officer has assessed that the estimated annual production of aged manure, based on the maximum holding capacity of 12,000 SCU, is expected to be approximately 4,200 tonnes. Applying the factor of 0.8% from Table 6 above, this is equivalent to an estimated potential total phosphorus load of around 33.6 tonnes annually.

The Delegated Officer accepts the Applicant's proposed phosphorus uptake of 18 kg P/ha/yr, noting that Water Quality Protection Note #22 (WQPN 22), recommends a total of up to 20kg per hectare per year as the maximum phosphorus application rate for Risk Category 'B' i.e. coarse grained soils in an area where the risk of eutrophication of surface waters is low. Therefore, an estimated 1,867 hectares would be required for cereal hay cropping each year to take up all the phosphorus present in aged manure at maximum holding capacity. However, the Applicant has less than 1500 hectares of suitable cleared land for cropping within the Premises, indicating that at most only 27t of phosphorus could be applied, being around 80% of the total phosphorus load potentially produced at maximum holding capacity. This means that at full production, significant quantities of manure will need to be exported from the site.

4.2.3 Wastewater ponds

The feedlot has been located on a sloping site (gradient of feedlot pens is approximately 2.5% on the long, downslope axis). Run-off from the pens is to be directed via clay and rubble lined drains (four side drains and a cross drain) to a gravel and clay-lined sedimentation basin from where it flows into a gravel and clay-lined storage pond (Primary holding pond). Overflow from the primary holding pond will cascade down to a secondary effluent holding pond.

The Applicant notes that effluent (contaminated runoff) directed via the cross sectional drain to the sedimentation basin is expected to flow at around 3.2m³/second. In accordance with the Guidelines this would ideally require a cross sectional area of 640m² for the sedimentation basin to achieve a flow rate within the sedimentation system of 0.005m/s. However, the cross-sectional area of the sedimentation system as built is only 146m². To compensate for the substantially reduced surface area, a small pipe of 25-30cm diameter is proposed to be installed to convey effluent from the basin to the Primary holding pond. This is intended to achieve a flow rate into the Primary holding pond of 0.3 to 0.4m³/s.

4.2.4 Wastewater treatment system - water balance

The 40 pens run in 4 series of 10 pens running downslope south to north with a central berm separating the eastern and western groups of 20 pens. The Applicant has determined pen drain design and effluent pond storage capacity requirements based on:

- a total catchment area for the pens of 18 hectares (for cross-pen drainage volumes);
- cross-pen drainage flow based on 60m length, 1.2% slope and peak inflow rate of 1.00m³/s;
- a 1 in 20 year design rainfall intensity of 100mm/hr;
- a downslope catch drain with a cross-sectional area of 0.89m², channel bed slope of 2% and flow velocity of 1.14m/s to convey effluent to the sedimentation basin;
- a sedimentation basin with 5,000m³ capacity and a mean depth of 1.3m to accept a peak inflow rate of 4.0m³/s; and
- holding pond(s) design based on capturing runoff from a total pens area of 16.9ha, a 1:20 year ARI calculated to generate 15,400m³ and the water volume collected and evaporated in a 9th decile year.

Based on the feedlot size and the design parameters above, the Applicant estimated a required effluent pond holding capacity of 62,400m³ in total for the two holding ponds (Primary Dam and Secondary Dam).

A separate controlled drainage area is proposed to capture contaminated runoff from both the manure storage and carcass composting pad and the feed pad / induction stockyards with contaminated runoff flowing to a small runoff dam/pond. This pond is small and is isolated from the main controlled drainage system, therefore requiring frequent monitoring and management to prevent spilling over.

The Applicant did not provide a water balance or sufficient information to assess whether or not the holding ponds have been adequately sized. However, the Applicant subsequently advised DWER on 4 April 2018 that effluent pond 1 had been modified and enlarged to increase its holding capacity to 35,000m³ and the second effluent holding pond had been built to 60,000m³ capacity, thus providing a total storage capacity of 95,000m³.

The Applicant has not applied for approval to irrigate land with water collected in ponds.

4.2.5 Deceased animal management

The Applicant is proposing to collect and place deceased animals (an estimated 270 per year) within dedicated windrows on the manure storage pad for composting. Windrows containing composting carcasses will be turned at 2-3 month intervals, monitored for their carbon to nitrogen ratio and adjusted, as required, to maintain a carbon to nitrogen (C:N) ratio of between 15:1 and 25:1. Cereal hay or straw and moisture (effluent from the manure pad runoff dam) will be added as required to optimise the composting process. Fully composted carcasses will then be integrated with other aged manure stored on the manure pad prior to either spreading to land within the Premises or being exported from the site.

4.3 Infrastructure

The feedlot infrastructure, as proposed by the Applicant and as it relates to the licensed activities, is detailed in Table 7 with reference to the site plans shown in Figures 1 and 2 below.

Table 7: Feedlot infrastructure

Infrastructure – Prescribed Activities Categories 55 and 68	
1	<p>Induction (livestock holding) yards constructed from in situ compacted gravel and clay for receipt, induction and dispatch of cattle. Occupies 0.4 hectares adjacent to the feed pad area and includes:</p> <ul style="list-style-type: none"> • a 0.5m high perimeter bund constructed from in situ gravel and clay designed to prevent discharge of effluent beyond the pad boundary; and • drainage channels designed to collect contaminated runoff from the entire feed preparation / storage and stockyard areas and convey it to a runoff collection dam.
2	<p>40 x pens (each 3,000m² in area), with a pen surface constructed from in situ gravel and clay to form a minimum compacted 300mm depth hardstand surface. Pens to be used as a cattle feedlot or for temporary holding and transitioning of livestock in preparation for live export.</p>
3	<p>Four side drains constructed from in situ compacted gravel and clay to collect contaminated stormwater from the pens and direct it northwards to the collector cross drain. Drains are designed to dissipate the energy from stormwater flowing south to north into the lower level cross drain including:</p> <ul style="list-style-type: none"> • surface roughness achieved along full length of drains by a floor filled with 300mm depth of 100-200mm sized rubble; • lower end of side drains is to expand to a width of 4.5m with 1:3 batters and a water depth of around 150mm. The floor of the drain is lined with geomembrane and filled to 300mm depth with 100mm-200mm sized rubble; and • four high energy drain structures installed to capture effluent through a grate, flowing into concrete caissons (septic tank liners). A 40-50 cm pipe conveys flow from the base of the concrete liners through the downslope pen walls into the floor of the cross drain, flowing into a perforated concrete caisson located centrally within the floor of the cross drain.
4	<p>Lower collector cross drain constructed of compacted in situ gravel and clay with a floor width of 4.5m and 1:3 batter to contain and convey effluent up to a depth of 150mm eastwards to the sedimentation trap/basin. Infrastructure to include side drain outlet concrete caisson structures to control and dissipate inflow energy.</p>
5	<p>Compacted in situ gravel and clay lined sedimentation trap / basin with a 15,000m³ volumetric capacity and surface area of 146m², connecting via a 25 - 30cm polyvinylchloride (pvc) pipe to the Primary holding pond. Design flow rate of 0.3 to 0.4 m³/s.</p> <p>Includes a geomembrane lined and rubble filled spillway to convey potential effluent overflow from the sedimentation trap to the Primary holding pond.</p>
6	<p>Compacted in situ gravel and clay lined effluent holding pond - Primary holding pond (35,000m³ capacity) connected via a spillway constructed from in situ compacted gravel and clay to the Secondary holding pond</p>
7	<p>Compacted in situ gravel and clay lined effluent holding pond – Secondary holding pond (60,00m³) Includes a compacted in situ gravel and clay lined spillway to convey potential effluent overflow from the pond directly onto adjacent land described as a vegetated 'Nutrient Stripping Grove' (approximately 3.6 hectares in area).</p>
8	<p>Compacted in situ gravel and clay area for storing manure and composting animal carcasses, with perimeter 0.5m high bund and draining (design 1% slope across the width of the pad) to a runoff collection dam (construction details and size not specified).</p>
9	<p>Compacted in situ gravel and clay hard stand area for feed milling and feed stocks storage (Feed Pad), including 5 silos and a 40HP R&R Cracker Mill. Hardstand dimensions: 170m by 80 m (1.3 hectares) inclusive of induction (stock) yards (noted above) and constructed with a 0.5m high perimeter bund to contain and divert runoff to the collection dam (same runoff collection dam as for manure storage and carcass composting area).</p>

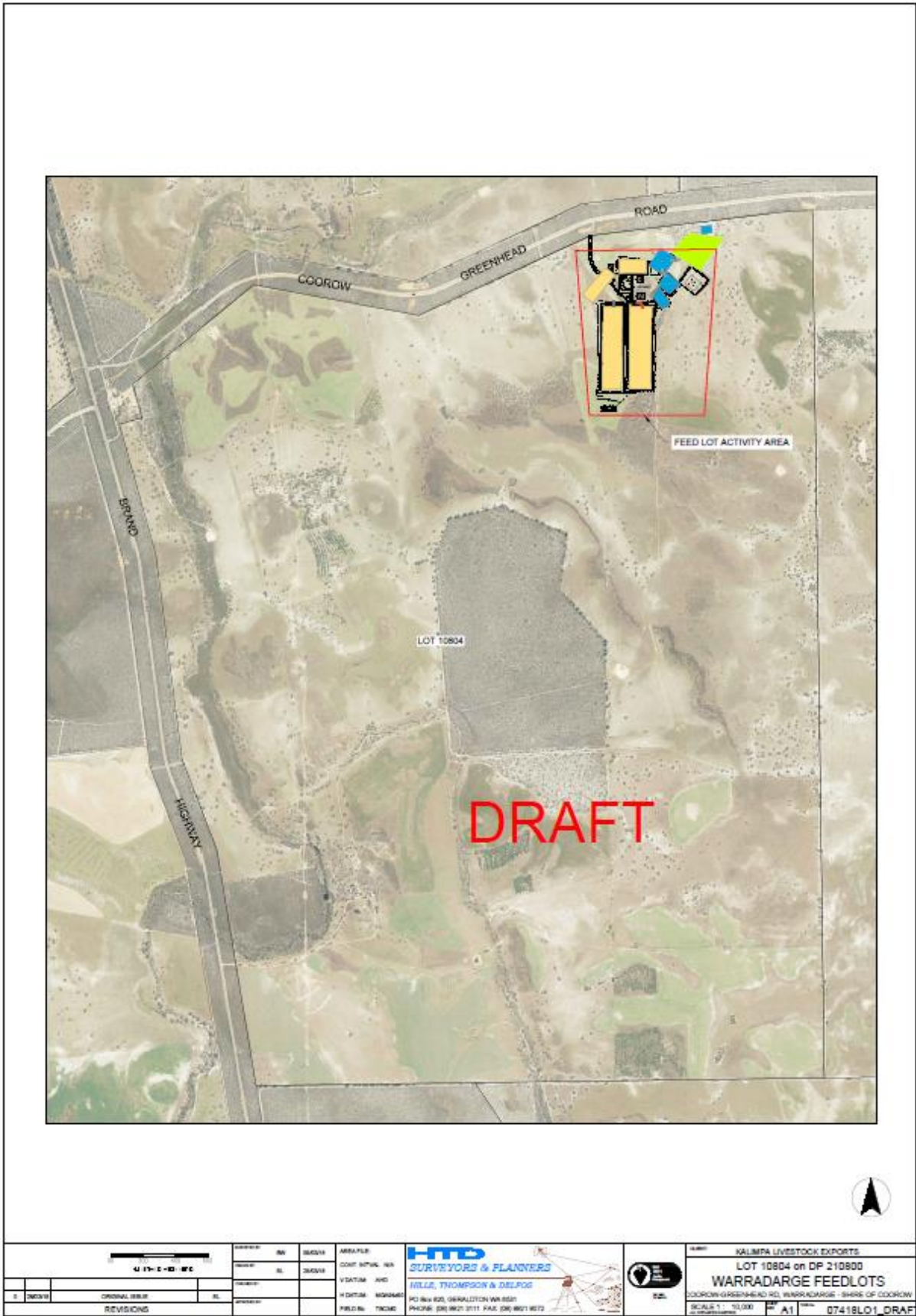


Figure 1: Location of Feedlot infrastructure within the Premises (from the Application)

4.4 Exclusions to the Premises

The Premises infrastructure described in Table 8 below has been excluded from this assessment.

Table 8: Exclusions to the Premises

	Infrastructure	Capacity	Reason for exclusion from the Licence
1	Access roads and haul roads	N/A	Not prescribed
2	Stormwater collection dam, referred to as the 'Footer Dam' and all other dams within the Premises, but outside of the Feedlot Activity Area	Unknown	Not prescribed
3	4 x water storage tanks	100kL each	Not prescribed
4	Groundwater extraction bores	N/A	Not prescribed
5	Rural residence/s and other sheds or buildings outside the Feedlot Activity Area, including any worker accommodation & amenities	N/A	Not prescribed

5. Legislative context

Table 9 summarises approvals relevant to the assessment.

Table 9: Relevant approvals and tenure

Legislation	Number	Subsidiary	Approval
<i>Rights in Water and Irrigation Act 1914</i>	GWL 183857(2)	Kalimpa Park Pty Ltd	95,000 kL Annual water entitlement for stock watering. Licence Duration: 16 February 2018 to 26 February 2027

5.1 Other relevant approvals

5.1.1 Planning approvals

The Applicant initially applied to the Shire of Coorow for planning approval to construct and operate a 3,000 head live export depot / cattle feedlot facility, consisting of 20 outdoor pens (4,500 m² each) and holding up to 150 cattle in each pen (30m² per head). Conditional approval for the 3,000 head cattle feedlot was given by the Shire of Coorow at its' Council meeting on 15 February 2017 (Planning Consent D2017/001).

Kalimpa Park Pty Ltd subsequently applied to Council for an amendment to the planning approval to allow for up 12,000 head of cattle to be held at any one time, doubling the proposed number of pens to 40 (3,000m² each) and increasing the density of holding to 10m² per head. Due to the significant change in the proposed facility size and operations, the Shire of Coorow undertook a second round of advertising and referral of the Application to surrounding landowners and relevant government agencies.

The requested amendment to the Planning Consent was approved on 19 July 2017.

5.1.2 Applicable regulations, standards and guidelines

The overarching legislative framework of this assessment is the EP Act and EP Regulations. In addition, the industry guidelines, *National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition)* and the *National Beef Cattle Feedlot Environmental Code of Practice (2nd Edition)* (the Guidelines), plus the Meat and Livestock Industry publication 'Beef Cattle Feedlots: waste management and utilisation' (September 2015) are applicable to this assessment.

These guidelines and all DWER guidance statements which inform this assessment are listed in Appendix 1.

5.1.3 Compliance history

Construction of the feedlot commenced in early 2017 without a works approval being granted. At the time the decision on the Application was made, this matter was being investigated.

5.1.4 Site Visits

DWER Officers visited the site on Wednesday 26 July 2017 noting that construction of the feedlot had substantially commenced.

During the visit the following issues were noted:

- erosion of several sections of the surface of the pen pads and access roads / laneways
- erosion and collapse of sections of the downslope end of pen pad banks;
- pen pads built with long axis on the downward slope of the land;
- sedimentation pond partially full from sediment deposited as a result of scouring of the pen pad surface.
- sedimentation pond and Primary Dam not built to size and volumetric capacity as provided in the Application; and
- sections of key planned infrastructure did not include controlled drainage areas for the feed pad/induction yards or the manure storage area.

DWER Officers visited the site again on Wednesday 15 November 2017 noting the following:

- further changes had been made to the siting of key infrastructure relative to the last plans submitted to DWER on 20 September 2017 including the location of the secondary wastewater holding dam/pond, the induction/cattle dispatch yards and the proposed location of the manure storage hardstand. DWER had not been notified of these changes;
- previously identified gully erosion at the downslope ends of the pen pads had not been repaired and were considered to have been further eroded since the site visit conducted on 26 July 2017;
- surface erosion of the pen pads indicative of water flowing south to north through the pens in some instances raising concerns about pen surface construction / compaction and associated permeability;
- silt material lifting off pen surfaces was observed to be blowing around;
- surface erosion of storage dam/pond walls;
- several hundred cattle were present within seven of the ten pens on the western side of the eastern group of pens with pellet feed in troughs of these occupied pens;
- a damaged water pipe and associated water leak and erosion channel within one of the pens containing cattle;
- the western pens pad (20 pens) is the same as observed in July 2017, consisting of the pen pad surface only, with no fencing or other pen related infrastructure installed or in the process of being installed;
- since construction observed on 26 July 2017, the following additional key infrastructure has been partially built:
 - a) Cattle induction and holding yards (stockyards); and
 - b) Secondary Dam;

- construction of the following key infrastructure had not commenced;
 - a) manure storage hardstand; and
 - b) controlled drainage management infrastructure including: the perimeter bunds and sump for the feed pad/induction yards hardstand area; the upslope graded bank, drain and water storage dam to convey and capture clean stormwater away from the feedlot; 4 x side drains and cross drainage system connecting to the sedimentation basin, spillways or other drainage infrastructure to connect and control wastewater flows between the sedimentation basin, primary dam and secondary dam.

6. Consultation

The application was advertised in the *West Australian* on 5 June 2017 for a comment period ending on 26 June 2017. No comments were received in response to the advertised application. A letter inviting comment was also sent to the Shire of Coorow (the Shire) on 6 June 2017. The Shire subsequently corresponded with DWER with respect to confirming additional information submitted by the Applicant as part of their requested amendment to increase throughput and holding capacity at the facility. The Shire confirmed approval of the amended Planning Consent, and provided DWER with copies of all stakeholder comments submitted to the Shire as part of the Planning Consent amendment process, on 7 August 2017.

7. Location and siting

7.1 Siting context

The land upon which the feedlot has been constructed (Lot 10804) is zoned 'Rural' under the Shire of Coorow Local Planning Scheme No. 3. The Feedlot occupies approximately 50 hectares of the north east corner of the 1,970 hectare lot and is accessed from the Coorow-Greenhead Road approximately 2.9km east of the Brand Highway intersection.

The Feedlot is surrounded by other large farms with residential dwellings. A number of Nature Reserves / Crown Reserves are close to the feedlot. The Warradarge Roadhouse, is located approximately 2.9km west at the Coorow-Greenhead Road and Brand Highway intersection.

The nearest town, Eneabba is approximately 28 kilometres north, north-west of the Premises.

7.2 Residential and sensitive premises

The distances to residential and sensitive receptors are detailed in Table 10.

Table 10: Receptors and distance from activity boundary

Sensitive Land Uses		Distance from Prescribed Activity
Commercial Premises		Warradarge Roadhouse lies 2.9km west of the Feedlot
Single Rural or Farm Dwelling	1	1.5km west of the north west corner of the Feedlot
	2	3.0km east of the eastern boundary of the Feedlot
	3	3.9km north, north west of the north west corner of the Feedlot
Residential Area		Town of Eneabba 28km north

7.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at, or Emissions and Discharges from, the Premises. The distances to specified ecosystems are shown in Table 11. Table 11 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

The table has also been modified to align with the *Guidance Statement: Environmental Siting*.

Table 11: Environmental values

Specified ecosystems	Distance from the Premises
Parks and Wildlife Managed Lands and Waters	<ul style="list-style-type: none"> • Crown Reserve 46713. Lot 12666 on Plan 24594. Immediately west of Brand Hwy and the western boundary of the Premises, 2.9km west of the Feedlot Activity Area. • Crown Reserve 31030. Lot 11948 on Plan 240375. 5.7km north west of the Feedlot Activity Area. • Crown Reserve 29800. Lot 10807 on Plan 210821. 8km south east of the Feedlot Activity Area.
Biological component	Distance from the Premises
Threatened/Priority Flora	<p>Within Lot 10804 (the Premises) several rare and priority flora have been historically recorded including:</p> <ul style="list-style-type: none"> • two rare flora locations, the nearest to the Feedlot Activity Area being approximately 730 metres to the SW; • one record of a priority 3 flora species; and • one record of a priority 4 flora species. <p>A Priority 2 flora species site is located within the Road Reserve immediately north and down gradient of the Feedlot Activity Area.</p>
Other relevant ecosystem values	Distance from the Premises
Crown Reserve 29801 (Managed by Department of Planning, Lands and Heritage)	400 metres north, north east of the Feedlot Activity Area and includes a large section of the perennial Warradarge Creek.

7.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 12.

Table 12: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental value
<i>Rights in Water and Irrigation Act 1914 – Proclaimed surface and groundwater area -</i>	<p>The Premises is located within the Hill River and Tributaries Catchment of the Arrowsmith Groundwater Area.</p> <p>Warradarge Creek lies at its' closest point approximately 650 metres north of north west corner of the Feedlot Activity Area within a neighbouring rural lot (Lot 10830). The creek runs westerly through this Lot and then north to south through Lot 10804 (the Premises) within approximately 200-600 metres of its' western boundary.</p>	<p>Arrowsmith Groundwater Allocation Plan 2010 indicates the Yarragadee is unconfined to semi-confined at this location, so is vulnerable to contamination.</p> <p>Warradarge Creek has been identified as a potential groundwater dependent ecosystem</p>
Arrowsmith Groundwater Area – Yarragadee North Aquifer	<p>The Licensed bore is located approximately 3km SW of the Feedlot Activity Area. (WIN ID: 23027354). Historic records indicate the depth to groundwater at this site was at 51 metres.</p> <p>Another nearby bore (WIN ID: 20007331) shows historical depth to groundwater encountered at approximately 63 metres.</p>	Water used for drinking water supply for animals

7.5 Soil type

The Statewide Soils Database shows that soils at the site are characterised by surface leached sands underlain by lateritic gravels and mottled clays that occur at a progressively greater depth downslope.

7.6 Meteorology

7.6.1 Climate and prevailing winds

The regional climate is characterized by cool, wet winters and warm, dry summers. The nearest Bureau of Meteorology weather stations are at Warradarge (ID:008278) providing rainfall data only and the Badgingarra Research Station (ID:009037) located approximately 36.5km south-east of the Premises.

Mean morning and afternoon wind speeds recorded at the Badgingarra Research Station are plotted in Figure 3 below.

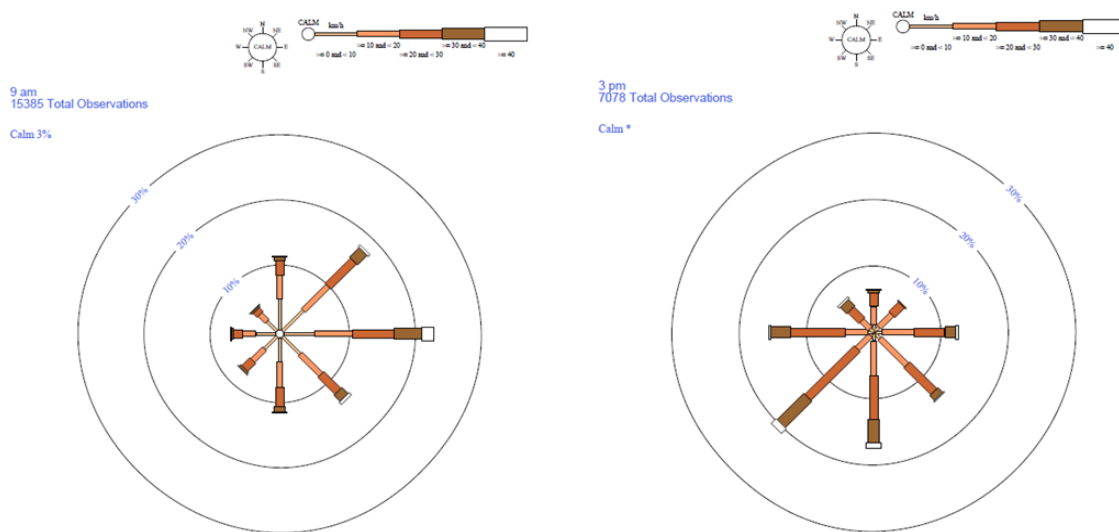


Figure 3: Badgingarra 9am and 3pm wind roses

Source: Bureau of Meteorology website: www.bom.gov.au

Additionally the website: www.willyweather.com.au provides a 5 year average wind rose from the Badgingarra Research Station as shown in Figure 4 below:

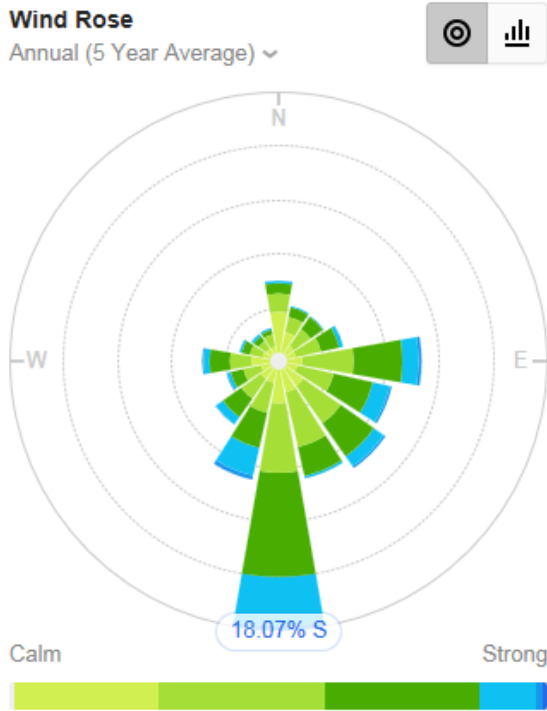


Figure 4: Wind rose (5 year average) – Badgingarra Research Station

In addition to the summarised 18.07% predominant southerly wind direction, the easterly, east south easterlies and south easterly winds contribute an accumulated 26.1% of the predominant wind direction.

7.6.2 Rainfall and temperature

The nearest Bureau of Meteorology weather station recording rainfall data is at Warradarge approximately 3 km west of the feedlot facility. Averaged monthly rainfall data from this station is displayed in Figure 5 below.

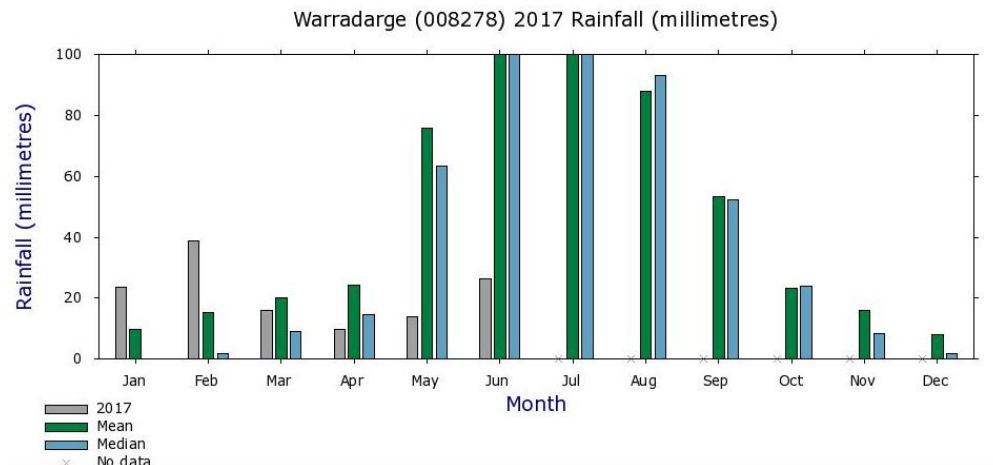


Figure 5: Averaged monthly rainfall - Warradarge

Averaged monthly rainfall and mean maximum temperature data from the Badgingarra station records are shown in Figure 6 below.

Location: 009037 BADGINGARRA RESEARCH STN

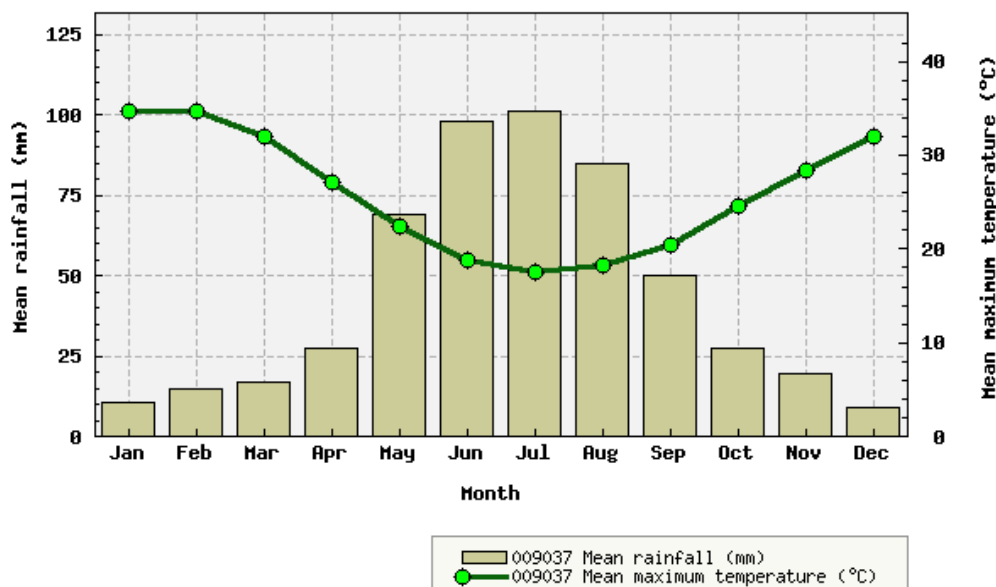


Figure 6: Averaged monthly rainfall and mean maximum temperatures - Badgingarra

Source: Bureau of Meteorology website: www.bom.gov.au

7.7 Odour and separation distance

The potential for fugitive odour emission impacts on community amenity from beef cattle feedlots is well established and widely recognised, with the application of appropriate separation or buffer distances a key consideration in the siting of feedlots.

The National Guidelines for Beef Cattle Feedlots in Australia (the Guidelines) provide methods for determining whether the proposed location of a feedlot is sufficiently separated from places where people reside.

In the first instance the Guidelines detail a separation distance (S-factor) method to calculate the buffer distance based on the feedlot capacity (expressed in Standard Cattle Units or SCU's) and the application of a Composite Site Factor (S) as follows:

The S-factor equation is:

$$D = \sqrt{N \times S}; \text{ where:}$$

D = separation distance (m)

$\sqrt{\quad}$ = square root

N = feedlot capacity in standard cattle units (SCU)

S = composite site factor

The composite site factor takes account of site-to-site and time-to-time variations to determine a composite site factor given by the equation:

$$S = S_1 \times S_2 \times S_3 \times S_4 \times S_5; \text{ where:}$$

S_1 = design and management factor

S_2 = receptor type factor

S_3 = topography or terrain factor

S_4 = vegetative cover factor

S_5 = wind direction factor

Explanatory notes and methods for determining values for the S factors are provided in the Guidelines. The Delegated Officer has used a composite calculation based on the feedlot capacity and in accordance with the descriptors provided in the Guidelines, as detailed in Table 13 below, to calculate separation distances.

Table 13: Feedlot capacity and composite site factor – calculation of separation distances

S1 Factor	S-Factor definition	Description*	S-Factor value
SCU	Standard Cattle Units	Maximum number of animals to be held in the feedlot in SCU.	12,000
S ₁	Design & management factor **	Value determined is based on annual rainfall of <750mm and a stocking density of 10m ² /SCU	65
S ₂	Receptor type factor	Single rural or farm dwelling	0.3
		Medium town (>125-500 persons)	1.1
S ₃	Topography or terrain factor	Undulating low-relief terrain	0.9
S ₄	Vegetative cover factor	Open grassland (few trees, long grass)	0.9
S ₅	Wind direction factor	Normal wind conditions	1.0

* S-Factor descriptions are based on descriptors provided in Appendix B of the National Guidelines for Beef Cattle Feedlots in Australia and as determined by the Delegated Officer as appropriate from the options listed.

** The National Guidelines for Beef Cattle Feedlots in Australia assume for new feedlots that design and management is in accordance with recommendations of the Guidelines.

The calculated composite site factor for a single rural dwelling is therefore = 65 x 0.3 x 0.9 x 0.9 x 1.0 = 15.795.

The separation distance (*D*) for a single rural dwelling = $\sqrt{12,000 \times 15.795} = 1,730\text{m}$.

The calculated composite site factor for a medium town is:

$$65 \times 1.1 \times 0.3 \times 0.9 \times 0.9 \times 1.0 = 17.375$$

The separation distance (*D*) for the town of Eneabba is therefore = $\sqrt{12,000 \times 17.375} = 1,903\text{m}$.

Table 14 provides a summary of the separation distances based on maximum capacity operations relative to the nearest sensitive receptors, noting that the closest rural dwelling at an estimated 1.5 kilometres west of the northwest corner of the Feedlot Activity Area, lies approximately 230 metres within the Guideline separation distance.

Table 14: Summary of S-Factor and measured distances to sensitive receptors

Factors	Rural Dwelling 1	Rural Dwelling 2	Rural Dwelling 3	Warradarge Roadhouse*	Nearest Town (Eneabba)
Calculated optimum separation distance (m)**	1,730	1,730	1,730	1,730	1,903
Measured distance (m)***	1,500	3,000	3,900	2,900	28,000
Separation distance	About 200m less than the Guideline separation distance	Acceptable - more than the Guideline separation distance	Acceptable - more than the Guideline separation distance	Acceptable - more than the Guideline separation distance	Acceptable - more than the Guideline separation distance

* The owner/operators of the roadhouse do not reside at the roadhouse.

** Delegated Officer's calculations based on the S-factor formula.

*** Delegated Officer measured distances using DWER GIS layer and as measured from the northwest corner of the Feedlot Activity Area boundary to the identified residence.

The Delegated Officer's risk assessment of odour is detailed in Section 8.4.

8. Risk assessment

8.1 Determination of emission, pathway and receptor

In undertaking its risk assessment, DWER will identify all potential emissions pathways and potential receptors to establish whether there is a Risk Event which requires detailed risk assessment.

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. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 15.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Table 15 below.

Table 15: Identification of emissions, pathway and receptors during operation

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
Feedlot operations <ul style="list-style-type: none"> Receipt & dispatch of cattle – induction yards Feed storage and on-site feed milling Housing and feeding of cattle in pens 	Dust	Nearest rural residence is approximately 1.5km west of the NW corner of the Feedlot.	Air / wind dispersion	Loss of amenity	No	The Delegated Officer considers the separation distance for these dust sources to be adequate	
	Noise	Nearest commercial receptor (roadhouse) is approximately 2.9km west of the Feedlot.			No	The Delegated Officer considers the separation distance for these noise sources to be adequate. The Environmental Protection (Noise) Regulations 1997 apply.	
	Odour	Nearest rural residence is approximately 1.5km west of the NW corner of the Feedlot. Nearest commercial receptor (roadhouse) is approximately 2.9km west of the Feedlot.	Air / wind dispersion	Loss of amenity	Yes	See section 8.4	
Collection, treatment and storage of waste materials <ul style="list-style-type: none"> Manure collected from pens & stockyard transferred to storage pad for temporary storage / aging Carcasses to manure storage pad for composting Sediments and sludge removed from collection sumps, sedimentation basin or effluent holding ponds Wastewater run-off from pens, induction yards & feed pad – capture and storage in drains, sumps, sedimentation basin & dams 	Dust	Nearest rural residence is approximately 1.5km west of the NW corner of the Feedlot.	Air / wind dispersion	Loss of amenity	No	The Delegated Officer considers the separation distance for these dust sources to be adequate	
	Noise	Nearest commercial receptor (roadhouse) is approximately 2.9km west of the Feedlot.			No	The Delegated Officer considers the separation distance for these noise sources to be adequate. The Environmental Protection (Noise) Regulations 1997 apply.	
	Odour	Nearest rural residence is approximately 1.5km west of the NW corner of the Feedlot. Nearest commercial receptor (roadhouse) is approximately 2.9km west of the Feedlot.	Air / wind dispersion	Loss of amenity	Yes	See section 8.4	
	Wastewater / leachate discharge to land	Remnant vegetation and agricultural land / soils	Direct discharge and infiltration through soil	Soil/remnant vegetation degradation and groundwater impacts	Yes	See section 8.5	
		Surface water – Closest is the perennial Warradarge Creek located approximately 550m north of the north-west corner of the Feedlot.	Direct discharge	Contamination of surface water	No	The Delegated Officer considers the separation distance to creek is sufficient, including buffer of road reserve and the Coorow-Greenhead Road preventing direct discharge to surface water.	

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
Solid Waste Disposal	<ul style="list-style-type: none"> Mechanical spreading of aged manure or composted carcasses to land 	Dust	Nearby rural residences and commercial receptor (Warradarge Roadhouse). Variable distance to receptors dependent on where on the Premises manure is to be applied	Air / wind dispersion	Loss of amenity	No	The Delegated Officer considers any dust generated from this activity would be minimal and acceptable for short term emissions from this type of agricultural activity.
		Noise				No	The Delegated Officer considers any noise generated from the use of machinery would be minimal, short term and part of standard agricultural activity. The Environmental Protection (Noise) Regulations 1997 apply.
		Odour				Yes	See section 8.4
	Discharge to land	Cleared agricultural land / soils where manure is applied, areas of remnant vegetation and drainage lines (Warradarge Creek or other drainage connecting to the creek)	Infiltration through soil and / or overland transport of contaminants	Contamination of soil with potential for adverse impacts on groundwater dependent ecosystems, degradation or death of native vegetation or degradation of agricultural land as a result of excessive nutrient or salts application to land.	Yes	See section 8.6	

8.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 16 below.

Table 16: Risk rating matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 17 below.

Table 17: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
			Environment	Public health* and amenity (such as air and water quality, noise, and odour)
Almost Certain	The risk event is expected to occur in most circumstances	Severe	<ul style="list-style-type: none"> • onsite impacts: catastrophic • offsite impacts local scale: high level or above • offsite impacts wider scale: mid-level or above • Mid to long-term or permanent impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are significantly exceeded 	<ul style="list-style-type: none"> • Loss of life • Adverse health effects: high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • Local scale impacts: permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	<ul style="list-style-type: none"> • onsite impacts: high level • offsite impacts local scale: mid-level • offsite impacts wider scale: low level • Short-term impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are exceeded 	<ul style="list-style-type: none"> • Adverse health effects: mid-level or frequent medical treatment • Specific Consequence Criteria (for public health) are exceeded • Local scale impacts: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	<ul style="list-style-type: none"> • onsite impacts: mid-level • offsite impacts local scale: low level • offsite impacts wider scale: minimal • Specific Consequence Criteria (for environment) are at risk of not being met 	<ul style="list-style-type: none"> • Adverse health effects: low level or occasional medical treatment • Specific Consequence Criteria (for public health) are at risk of not being met • Local scale impacts: mid-level impact to amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	<ul style="list-style-type: none"> • onsite impacts: low level • offsite impacts local scale: minimal • offsite impacts wider scale: not detectable • Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> • Specific Consequence Criteria (for public health) are likely to be met • Local scale impacts: low level impact to amenity

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
		Environment	Public health* and amenity (such as air and water quality, noise, and odour)	
Almost Certain	The risk event is expected to occur in most circumstances	Severe	<ul style="list-style-type: none"> • onsite impacts: catastrophic • offsite impacts local scale: high level or above • offsite impacts wider scale: mid-level or above • Mid to long-term or permanent impact to an area of high conservation value or special significance[^] • Specific Consequence Criteria (for environment) are significantly exceeded 	<ul style="list-style-type: none"> • Loss of life • Adverse health effects: high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • Local scale impacts: permanent loss of amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	<ul style="list-style-type: none"> • onsite impact: minimal • Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> • Local scale: minimal to amenity • Specific Consequence Criteria (for public health) met

[^] Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting*.

* In applying public health criteria, DWER may have regard to the Department of Health's *Health Risk Assessment (Scoping) Guidelines*.

"onsite" means within the Prescribed Premises boundary.

8.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment table, Table 18 below:

Table 18: Risk treatment table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable.	Risk Event will not be tolerated. DWER may refuse application.
High	May be acceptable. Subject to multiple regulatory controls.	Risk Event may be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls.	Risk Event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.
Low	Acceptable, generally not controlled.	Risk Event is acceptable and will generally not be subject to regulatory controls.

8.4 Risk Assessment – Odour (Operations)

8.4.1 Description of Odour Risk Event

Odour generated from normal day to day operations at the feedlot dispersed through the air, causing an adverse impact on nearby residential premises.

8.4.2 Identification and general characterisation of emission

The feedlot with a holding capacity of up to 12,000 SCU will generate large quantities of manure which has the capacity to cause offensive odours under particular circumstances and conditions. Odour from a cattle feedlot has a typical cattle manure smell.

Odour sources include the pens and stockyards, the manure storage and composting hardstand, the effluent drainage system, leachate collection sumps, the sedimentation basin and effluent holding dams. Aged manure applied to land can also be a source of odour.

Contaminated runoff drainage systems and the ponds where settled sediments and effluent are captured and temporarily stored, can be significant sources of odour if they are not managed appropriately. Manure collected from pens, laneways and induction yards, and deceased animals transferred to the manure pad for temporary storage and treatment, are another potential source of odour. The Applicant has indicated that the number of deceased animals to be disposed of will be approximately 270 per year, with carcasses to be composted within windrows on the manure hardstand. Periodic desludging of sumps, drainage systems and ponds can also generate odour.

The frequency or duration of any odours emitted will depend on a number of factors including climatic factors such as rainfall and temperature, stocking densities, the maintenance and upkeep of the facility infrastructure and waste management practices implemented by the Licence Holder.

8.4.3 Description of potential adverse impact from the emission

Key factors determining the frequency or duration over which generated odours may reach and negatively impact amenity for nearby sensitive receptors will largely be dependent on landscape conditions and weather, particularly wind direction and speed.

The nearest rural residence is approximately 1.5km west of the northwest corner of the Feedlot and has been assessed as being at a distance slightly less than the required separation distance for odour. Predominant morning easterly winds indicate the potential for adverse odour impacts to occur at this receptor. The next closest receptor, the Warradarge roadhouse, situated approximately 2.9km west of the Feedlot, is considered to be an acceptable distance from the Feedlot and therefore unlikely to be impacted by odour emissions.

8.4.4 Criteria for assessment

The general requirement in the EP Act, as it relates to odour emissions, is that a person shall not cause an unreasonable odour emission being an emission that unreasonably interferes with the health, welfare, convenience, comfort or amenity of any person. The Delegated Officer considers that assessment of odours should be in accordance with the Cattle Feedlot Guidelines.

8.4.5 Applicant's controls

This assessment has reviewed the Applicant's proposed controls for odour set out in Table 19 below.

Table 19: Applicant's proposed controls for Odour

Site Area	Infrastructure Details	Operational Details
Feedlot	Pens constructed from compacted in situ gravel and clay to achieve an impermeable layer with a minimum depth of 300mm, graded to drain to one of four side drains.	No specific monitoring or maintenance related to odour controls proposed.
	4 x side drains flowing south to north to a receiving effluent collection cross drain. Cross collection drain conveys contaminated runoff (effluent) to the settling / sedimentation basin.	No specific monitoring or maintenance related to odour controls proposed.
	Settling / sedimentation basin constructed from in situ gravel and clay. Surface area 146m ² . Volumetric capacity 15,000m ³ .	'Dry manure' will be extracted from the sedimentation basin annually and applied to cereal hay crops.
	Primary (Effluent) Dam constructed from in situ gravel and clay. Volumetric capacity 35,000m ³ .	No specific monitoring or maintenance related to odour controls proposed.
	Secondary (Effluent) Dam constructed from in situ gravel and clay. Volumetric capacity 60,000m ³ .	No specific monitoring or maintenance related to odour controls proposed.
Feed Pad/ Stockyards	Feed Pad constructed from compacted in situ gravel and clay, 1.3 hectares in area. Pad perimeter has a 0.5 m high bund and is graded to divert and capture contaminated runoff to the 1,200m ³ capacity sump located in the north-east corner. Induction/dispatch stockyards. Maximum holding capacity 1,000 SCU	No specific monitoring or maintenance related to odour controls proposed.
Manure storage and disposal	Manure and carcass composting pad constructed from compacted in situ gravel and clay. Pad perimeter has a 0.5 m high bund and is graded to divert and capture contaminated runoff to a dam.	Manure windrows will be regularly turned to facilitate manure breakdown. Manure applied to land will be incorporated into the soil when cereal hay crops are sown (between April – June). No further specific monitoring or maintenance related to odour controls proposed.
Carcass composting and disposal		Carcasses will be placed within dedicated windrows within the manure storage pad, on top of a minimum 300mm manure base and completely covered with manure. The Carbon to Nitrogen ratio will be monitored and adjusted as required to be between 15:1 and 25:1, adding cereal hay or straw as required. Composting carcass windrows will be turned very 2-3 months.

8.4.6 Key findings

The Delegated Officer has reviewed the information regarding odour and has found:

1. The Feedlot is essentially well located with respect to odour separation distances, though the nearest rural dwelling may on rare occasions be impacted by odour for short periods of time.
2. In the absence of Applicant specified controls to manage odour, operational controls will need to be added to the Licence to ensure odorous sources are appropriately managed.

8.4.7 Consequence

If odour emissions occur, then the Delegated Officer has determined that the impact of odour on the amenity of nearby sensitive receptors will be low level local scale impacts. Therefore, the Delegated Officer considers the consequence of odour emissions to be **Minor**.

8.4.8 Likelihood of Risk Event

The Applicant has not specifically addressed key operational monitoring and management actions to manage the odour risk. The closest rural residence and the Warradarge roadhouse are both downwind of the Feedlot relative to prevailing morning winds.

The Delegated Officer has therefore determined that the likelihood of an odour Risk Event is that it could occur at some time. Therefore, the Delegated Officer considers the likelihood of an odour Risk Event to be **Possible**.

8.4.9 Overall rating of Odour Risk

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 16) and determined that the overall rating for the risk of *odour* is **Medium**.

8.5 Risk Assessment - Direct and Indirect Discharges to Land

Stormwater coming into contact with feedlot operational wastes, including compost, generating contaminated runoff that is discharged directly to land resulting in soil degradation, groundwater contamination and / or the degeneration and potential loss of remnant native vegetation. Alternatively, contaminated water (effluent) infiltrates through containment surfaces contaminating underlying soils and potentially contaminating groundwater.

8.5.1 Identification and general characterisation of the emissions

Stormwater mixing with cattle manure, deposited urine and spilt feed within the feedlot operational areas (pens, induction yards, manure storage/composting pad and feed pad) produces a nutrient rich and high salt and sediment laden runoff with the potential to discharge both directly or indirectly to land and negatively impact on soil, groundwater and native vegetation if the waste is not suitably contained and managed.

8.5.2 Description of potential adverse impacts from the emission

High nutrient, salt and sediment loads may impact on the sandy, poor quality surface soils within the Premises to reduce agricultural productivity of the soil and if transported into areas of existing remnant vegetation, could result in the degradation or even death of these plant communities, which are highly sensitive to high nutrient levels, particularly phosphorus.

Within the immediate boundary of the Feedlot there exists a small patch of remnant native vegetation, immediately downstream of the eastern line of pens and surrounded by the feed pad area, stockyards and effluent holding ponds. Other isolated native trees and shrubs are present within the otherwise cleared areas immediately surrounding the Feedlot. This vegetation

has not been surveyed to determine the presence or otherwise of any listed declared or priority flora species. However, historically, records show that two rare flora species (*Eucalyptus sp.*) were recorded as being present within the Premises, along with a Priority 3 and Priority 4 listed species. In addition, a Priority 2 flora species site is understood to be present within the Road Reserve immediately north and down gradient of the Feedlot.

Wastewater and leachate discharges to land would also be expected to cause adverse water quality impacts on groundwater and groundwater dependent ecosystems. However, negative impacts on groundwater either as a result of direct or indirect discharges of effluent to land are considered unlikely given the depth to groundwater estimated to be 50-60mBGL.

8.5.3 Criteria for assessment

A direct or indirect discharge of contaminated water (effluent) should not occur during operation of the Feedlot, other than after an exceptionally wet winter period of rain. As such, the main areas of the feedlot need to be built upon or with a liner that prevents the infiltration of wastewater to groundwater. Collected wastewater must also be contained in holding ponds that are large enough (spill less frequently than once ever ten years).

8.5.4 Applicant controls

This assessment has reviewed the Applicant's controls as set out in Table 20 below.

Table 20: Applicant's proposed controls for direct and indirect discharges to land

Site Area	Infrastructure Details	Operational Details	Reference to Issued Licence Plan
General controls	Perimeter fence to be installed around Feedlot Activity Area	To prevent access by grazing animals.	N/A
	Establish stoloniferous vegetation	To stabilise exposed ground. Location/s not specified.	
	Key infrastructure	Repair damage before blowouts occur.	
Feedlot	Situated at the southern end of the feedlot: a graded bank / drain to collect and convey drainage east to a stormwater trap	To prevent the ingress of clean stormwater runoff. Drain section design is to achieve a roughness equivalent to Manning Coefficient value of ~ 0.030. No specific monitoring or maintenance proposed.	Site Plan
	Pens constructed from compacted in situ gravel and clay to achieve an impermeable layer with a minimum depth of 300mm, graded to drain to one of four side drains.	A manure interface of at least 500mm between the surface of the pen and the clay layer is to be maintained. No further specific monitoring or maintenance proposed.	Site Plan
	4 x side drains flowing south to north to a receiving effluent collection cross drain. Collection cross drain conveys contaminated runoff (effluent) to the settling / sedimentation basin.	Water flow will not exceed 1.1m/s Flow capacity is 1m ³ /s for each side drain. Lower end of side drains are to be 4.5m wide with a geomembrane liner and the floor filled to a depth of 100-200mm rubble to control flow. Drain floors to be either grassed	Site Plan

Site Area	Infrastructure Details	Operational Details	Reference to Issued Licence Plan
		<p>or rock-filled to achieve a roughness (Manning Coefficient) value of ~0.030.</p> <p>A high energy drain structure is to be installed where the side drains enter the cross drain to manage inflows: Incoming effluent flows through a grating down into a column of several concrete caissons (septic tank liners). A 40-50 cm diameter pipe at the base conveys effluent across into the cross drain entering a centrally placed, perforated concrete caisson.</p> <p>No specific monitoring or maintenance proposed.</p>	
	Settling / sedimentation basin constructed from in situ gravel and clay. Surface area 146m ² . Volumetric capacity 15,000m ³ .	'Dry manure' will be extracted from the sedimentation basin annually and applied to cereal hay crops.	Site Plan
	Spillway from sedimentation basin to primary dam - constructed from compacted in situ gravel and clay and 1000mm below the crest of the primary dam (SW corner).	No specific monitoring or maintenance proposed.	Site Plan
	Primary (Effluent Holding) Dam constructed from in situ gravel and clay. Volumetric capacity 35,000m ³ . Connecting via an overflow channel to the secondary dam	No specific monitoring or maintenance proposed.	Site Plan
	Secondary (Effluent Holding) Dam constructed from in situ gravel and clay. Volumetric capacity 60,000m ³ .	No specific monitoring or maintenance proposed.	Site Plan
Feed Pad/ Stockyards	Feed Pad constructed from compacted in situ gravel and clay, 1.3 hectares in area. Pad perimeter has a 0.5 m high bund and is graded to divert and capture contaminated runoff to a dam located in the north-east corner. Induction/dispatch stockyards located in the SE corner of this pad. Maximum livestock holding capacity of 1,000 SCU.	<p>Solid wastes and yard deaths will be integrated into the composting stream.</p> <p>Effluent in the sump will need to be routinely consumed to maintain it in an empty state.</p>	Site Plan

Site Area	Infrastructure Details	Operational Details	Reference to Issued Licence Plan
Manure storage and disposal	Manure and carcass composting pad constructed from compacted in situ gravel and clay. Pad perimeter has a 0.5 m high bund and is graded to divert and capture contaminated runoff to the dam located in the north-east corner.	Manure windrows will be regularly turned to facilitate manure breakdown. Manure applied to land will be incorporated into the soil when cereal hay crops are sown. Effluent in the sump will need to be routinely consumed to maintain it in an empty state.	Site Plan
Carcass composting and disposal		Carcasses will be placed within dedicated windrows within the manure storage pad (DACA), on top of a minimum 300mm manure base and completely covered with manure The Carbon to Nitrogen ratio will be monitored and adjusted as required to be between 15:1 and 25:1, adding cereal hay or straw as required. Composting carcass windrows will be turned very 2-3 months.	

8.5.5 Key findings

The Delegated Officer has reviewed the information regarding discharges of contaminated runoff to land and has found:

1. The potential for erosion has been illustrated by substantial rain damage observed during site visits.
2. The Applicant advised that the pen surfaces are 'impermeable' based on the in situ materials used for construction and the constructed depth of the compacted surface, stated to be 300mm. No permeability testing has been undertaken to confirm the permeability status of the pens or any of the other contaminated runoff containment infrastructure.
3. Significant erosion of sections of the downslope pen surfaces witnessed in July and November 2017 suggest that the pens and pond surfaces may not have been constructed properly.
4. The standard to which the feedlot has been designed has not been advised. No certification to a design standard has been provided with the Application.
5. No water balance has been provided to give assurance that holding ponds have sufficient capacity.

8.5.6 Consequence

An uncontrolled release of contaminated runoff (effluent) into the environment is likely to have a negative effect on the environment. Therefore, the Delegated Officer considers the consequence of discharges to land to be **Minor**.

8.5.7 Likelihood of Risk Event

Taking into consideration the uncertainties inherent in the Feedlot infrastructure design and construction, including all aspects of effluent capture and storage, erosion problems identified during construction and the absence of a site specific Waste Management Plan, the Delegated Officer has determined that the likelihood of effluent being discharged to land is likely to occur. Therefore, the Delegated Officer considers the likelihood of discharge to land to be **Likely**.

8.5.8 Overall rating of Contaminated Runoff Discharge to Land Risk

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 16) and determined that the overall rating for the risk of contaminated runoff is **Medium**.

8.6 Risk of discharges from the application of manure to land

Aged manure and composted carcasses applied to land by mechanical spreading for the purposes of providing nutrients to promote the growth of cereal hay crops.

8.6.1 Identification and general characterisation of the emissions

Aged manure and composted carcasses applied to land contain significant quantities of nutrients, salts and organic carbon. Nutrients or salts that are applied in excess of plant requirements, or are not in a form that is readily available for plant uptake (e.g. some forms of phosphorus), can accumulate in the soil and have the potential to negatively affect the soil, and in the event of significant rainfall events, contribute to an uncontrolled release of nutrients to the environment. Salt accumulation can interfere with plant nitrogen uptake and general plant health.

8.6.2 Description of potential adverse impacts from the emission

Subject to soil conditions and climatic factors such as rainfall, nutrients can infiltrate through the soil profile beyond the root zone, potentially negatively impacting on groundwater quality and /or soil particles containing excess nutrients can be eroded and transported away from the point of application with potential adverse impacts on perennial creeks and remnant vegetation.

The Applicant is proposing to apply aged manure and composted carcasses annually to existing cleared areas within the Premises for cereal hay crop production. However, the proposed application areas have not been specifically mapped and do not identify whether and how other significant areas of remnant vegetation, or the perennial Warradarge Creek and other perennial creek drainage lines running through the Premises, will be buffered or protected from the potential negative impacts of manures applied to land.

Historical records show that two rare flora species (*Eucalyptus sp.*) were recorded as being present within the Premises, along with a Priority 3 and Priority 4 listed species. In addition, a Priority 2 flora species site is understood to be present within the Road Reserve immediately north and down gradient of the Feedlot. Stakeholder consultations conducted by the Shire of Coorow resulted in comments being provided by the then Department of Parks and Wildlife (now Department of Biodiversity, Conservation and Attractions) who advised that a flora survey should be conducted over any areas likely to be impacted by the development, in order to determine the presence or absence of threatened species.

8.6.3 Criteria for assessment

The Cattle Feedlot Guidelines provide guidance on assessing the suitability of land for manure application and WQPN 22 provides guidance on nutrient loading rates to land based on soil types and nearby water resources. As a general rule, the Delegated Officer considers that waste should be applied to land at a rate at which it can be utilised as a resource by agricultural activities, rather than applied in excessive amounts.

8.6.4 Applicant controls

The Applicant is proposing to apply manure at a rate of 9.5m³ per hectare, applying key nutrients at the following estimated rates:

Nitrogen: 64kg/ha; Phosphorus: 23kg/ha and Potassium: 67kg/ha.

The Applicant has assumed a cereal crop yield of 9 t/ha and a phosphorus uptake rate of 2kg/t of cereal hay grown, therefore estimating an uptake of 18kgP/ha/year. Manure is proposed to be incorporated into the soil when cereal crops are sown, i.e. between April to June annually. Annual paddock soil testing will be undertaken to monitor nutrient levels.

8.6.5 Key findings

The Delegated Officer has reviewed the information regarding the application of manure and composted carcasses to land and has found:

1. At full production capacity, the predicted annual production of manure exceeds the amount that can be applied to land. A portion of the waste may have to be applied elsewhere if the feedlot is operated at full capacity.
2. The Applicant has not submitted a map showing all areas where it is proposing to apply manure to land and grow cereal hay crops.

8.6.6 Consequence

Based on the hazard characterisation, depth to groundwater, the presence of large areas of remnant vegetation and drainage lines and the proposed manure application rate the Delegated Officer considers there could be mid-level on-site impacts and the potential for low level off-site impacts to occur. However, provided that waste is applied at a controlled rate and to acceptable areas, there is slight risk of adverse impacts to the environment. Therefore the Delegated Officer has determined the consequence of emissions from the application of manure to land to be **Slight**.

8.6.7 Likelihood of Risk Event

Provided that manure is applied to land in a sustainable manner and to land that can utilize it then, there is likely to be no adverse impacts to land. However, in the absence of clearly identified areas of land to apply manure, that meet the required buffer distances, the Delegated Officer considers the likelihood of adverse impacts to land to be **Possible**.

8.6.8 Overall rating of Application of Manure to Land Risk

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 16) and determined that the overall rating for the risk of application of manure to land is **Low**.

8.7 Summary of acceptability and treatment of Risk Events

A summary of the risk assessment and the acceptability or unacceptability of the risk events set out above, with the appropriate treatment and control, are set out in Table 21 below. Controls are described further in section 9.

Table 21: Risk assessment summary

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	Source	Pathway/ Receptor (Impact)			
1.	Odour emissions (Operation)	Pens, livestock holding yards, drains, sumps, manure pad, sedimentation basin and effluent holding ponds	Air/wind to sensitive receptor causing loss of amenity	Infrastructure controls. Management controls have not been specified.	Minor consequence Possible Medium risk	Acceptable subject to regulatory controls
2.	Direct and / or indirect discharge of contaminated runoff (Operation)	Pens, livestock holding yards, drains, sumps, manure pad, feed pad, sedimentation basin and effluent holding ponds	Direct or indirect discharge to land causing impacts on soil quality and structure and impacts on native vegetation	Infrastructure and management controls.	Minor consequence Possible Medium risk	Acceptable subject to Licence Holder controls and regulatory controls
3.	Application of solids to land (Operation)	Aged manure and composted animal carcasses	Direct discharge to land or through erosion and deposition of contaminated soil impacting on soil quality and structure, drainage lines and native vegetation	Management controls.	Moderate consequence Likely Low risk	Acceptable subject to Licence Holder controls and regulatory controls

9. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in Table 22. The risks are set out in the assessment in section 8 and the controls are detailed in this section. DWER will determine controls having regard to the adequacy of controls proposed by the Applicant. The conditions of the Licence will be set to give effect to the determined regulatory controls.

Table 22: Summary of regulatory controls to be applied

		Controls (references are to sections below, setting out details of controls)		
		9.1 Infrastructure - construction and design verification and audit	9.2 Monitoring, record keeping and reporting	9.3 Specified Actions
Risk Items (see risk analysis in section 8)	1. Odour emissions	•	•	•
	2. Discharges to land of contaminated runoff	•	•	•
	3. Application of manure to land	•	•	•

9.1 Licence controls – Infrastructure construction and design verification and audit

The following requirements will be included in the Licence:

- submission of drawings and design details of all key feedlot infrastructure as constructed;
- surveyed contour mapping of the feedlot pens surface to confirm slope and expected drainage flows off the pen surface;
- submission of an Environmental Auditors report requiring an audit of all key feedlot infrastructure as built, against the design standards taken from the National Guidelines for Beef Cattle Feedlots in Australia, including testing and reporting on the permeability of the pens and controlled drainage structure liners in accordance with the Water Quality Protection Note 27: Liners for containing pollutants, using engineered soils, section 17, Liner Certification; and
- subject to results of the infrastructure audit and liner testing, an Environmental Improvement Plan is required to be submitted if any deficiencies in meeting required design standards are identified.

Grounds: The feedlot was not built in accordance with the provisions of a works approval. The standard to which the feedlot has been built has not been provided. Accurate ‘as built’ drawings have not been provided. Significant erosion has been observed in the feedlot pens and drainage system. A water balance has not been provided to determine whether or not, the holding ponds have sufficient capacity.

9.2 Monitoring, Recordkeeping and Reporting

The Licence includes a requirement to monitor, record and report on the incoming and outgoing numbers of cattle held in the feedlot pens and stockyards, numbers of deceased animals, tonnages of any solid wastes (aged manure and composted carcasses) applied to land within the larger Premises boundary and all other solid waste exported from the Premises. In addition, there are requirements to keep records of cleaning, repairs and maintenance activities, including post high rainfall events and in the event of a pond overflow.

Grounds: The Licence is allowing the Applicant to operate at the full capacity of the feedlot (ie 12,000 SCU). Monitoring and reporting requirements are necessary to ensure compliance with solid waste storage and disposal conditions and operation within the facility capacity limits with respect to cattle throughput. Other monitoring and record keeping requirements are in accordance with the Guidelines and necessary to ensure the appropriate management of contaminated runoff and the associated containment infrastructure.

9.3 Specified Actions

The Licence includes conditions in the following four broad areas related to feedlot activities:

- manure and effluent management including specific requirements for the capture and conveyance of contaminated runoff, and management and maintenance of the feedlot pens and livestock holding yards;
- storage and processing of waste materials including manure, spilt feed, sludge and sediments periodically removed from drains and holding ponds;
- management of deceased animals, including their composting and disposal; and
- application of solid waste (aged manure and composted carcasses) to specified areas within the Premises.

Grounds: These conditions are consistent with the management and operational requirements set by the Guidelines and are necessary to minimise the risk of:

- fugitive odour emissions impacting on amenity;
- direct and indirect emissions of contaminated runoff (effluent) to land occurring and impacting the environment; and
- the application of solid wastes to land impacting the surrounding environment and amenity.

10. Determination of Licence conditions

The conditions in the issued Licence in Attachment 1 have been determined in accordance with the *Guidance Statement: Setting Conditions*.

The *Guidance Statement: Licence Duration* has been applied and the Issued Licence has been granted for 3 years. This duration recognises:

- that the Premises were not constructed in accordance with a works approval;
- the partial completion of the Premises;
- uncertainty about the design and the standard to which the feedlot has been built; and
- the significant erosion observed in the feedlot pens and drainage systems during site visits.

Table 23 provides a summary of the conditions to be applied to this Licence.

Table 23: Summary of conditions to be applied

Licence Condition Reference	Grounds
Limit on holding capacity 1	This condition is valid and based on the identified maximum holding capacity of the facility.
Infrastructure construction and design verification and audit 2, 3, 4, 5, 6, 7, 8 & 9	These conditions are valid, risk-based and contain appropriate controls.
Specified actions - Operational controls for the management and minimisation of discharge of contaminated runoff, odour emissions and solid waste applications to land 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23	These conditions are valid, risk-based and contain appropriate controls.
Monitoring Inputs & Outputs 10	This condition is valid, risk-based and contains appropriate controls.
Emissions 11	This condition is valid, risk-based and consistent with the EP Act.
Information and Reporting 24, 25, 26, 27 and 28	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.

DWER notes that it may review the appropriateness and adequacy of controls at any time and that, following a review, DWER may initiate amendments to the Licence under the EP Act.

11. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Licence on 7 February 2018. The Applicant provided responses on 2 April and 4 April 2018. The responses provided:

- a request to re-examine the C:N ratio control for deceased animal management (Condition 22, Table 6 in the Licence); and
- a request to re-examine the pen cleaning frequency specified in Licence Condition 16, Table 4 on the basis that the feedlot is not likely to be stocked a full capacity in the near future. .

The response also noted that only 20 of the planned 40 pens were built, whereas the Licence allows for 40 pens. The Delegated Officer considers that Applicant is permitted by the Licence to build the yet to be completed 20 pens. This is because regulatory controls attached to the Licence have been established for 40 pens and that the pen liners, cross drains and ponds are currently in place.

In re-examining regulatory controls for deceased animals, the Delegated Officer considered that the C:N control was not needed as there are sufficient procedural controls in the Licence for

effective management of deceased animals.

In re-examining the specified frequency for pen cleaning, the Delegated Officer accepted that the feedlot is not likely to be stocked a full capacity in the near future. A reduction in the frequency of pen cleaning to three times each year would be acceptable, given the isolated location of the feedlot, typical dry climate and that there only a few rural dwelling near to the feedlot.

12. Conclusion

This assessment of the risks of activities on the Premises has been undertaken with due consideration of a number of factors, including the site visits to the Premises conducted on 26 July 2017 and 15 November 2017, submissions provided to the Shire of Coorow in response to stakeholder consultations, and documents and policies specified in this Decision Report (summarised in Table 2 and Appendix 1).

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

Paul Byrnes
Manager – Licensing (Process Industries)
Regulatory Services (Environment)

Delegated Officer
under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	Date	In text ref	Availability
1.	Application and supporting information	22 March 2017	The Application	DWER records A1398688
2.	Department of Environment Regulation – Further Information Required Kalimpa Erim Downs Feedlot (Applicant response)	20 May 2017	The Application – further information	DWER records A1436504
3.	Further information update package	20 September 2017	Revised Application	DWER records A1527308
4.	Kalimpa Park PL Shire of Coorow Development Approval. Minutes Ordinary Council Meeting 19/07/2017. Item 11.2.1	19 July 2017	Shire of Coorow Planning Approval and submissions	Accessed at http://www.coorow.wa.gov.au
	Kalimpa Park PL Approvals and Feedlot Submissions.pdf	8 August 2017		DWER records A1501419
5.	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.		DER 2015a	Accessed at www.dwer.wa.gov.au
6.	DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.		DER 2015b	
7.	DER, August 2016. <i>Guidance Statement: Licence duration</i> . Department of Environment Regulation, Perth.		DER 2016a	
8.	DER, November 2016. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.		DER 2016b	
9.	DER, November 2016. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.		DER 2016c	
10.	Feedlot Activity Area – update on infrastructure layout prepared by HTD Surveyors and Planners	2 April 2018	N/A	DWER records A1648427
11.	Revised detail on volumetric capacity of sedimentation basin and two effluent holding ponds	4 April 2018		DWER records A1648418

Attachment 1: Issued Licence L9061/2017/1
