



<b>Licence Number</b>	L8977/2016/1
<b>Licensee</b>	Kimberley Meat Company Pty Ltd (ACN 159 933 392)
<b>Registered business address</b>	Unit 5, 186 Hampden Road NEDLANDS WA 6009
<b>Duration</b>	07/11/2016 to 06/11/2036
<b>Prescribed Premises</b>	Category 15 – Abattoir Category 55 – Livestock saleyard or holding pen Category 83 – Fellmongering
<b>Premises</b>	Colourstone Abattoir  210 Great Northern Highway ROEBUCK WA 6725  Lot 210 on Plan 186082 Dampier Location 210

This **Licence** is granted to the **Licensee**, subject to the following **Conditions**, on 31 October 2016 by:

Date signed: 3 November 2016

**Jonathan Bailes**

**Manager Licensing (Process Industries)**

*an officer delegated under section 20 of the Environmental Protection Act 1986 (WA)*

## Conditions

### Environmental compliance

1. The **Licensee** must comply with the **EP Act** and all regulations prescribed under the **EP Act** applicable to the **Premises**, including:
  - (a) the duties of an occupier under s 61;
  - (b) the duty to notify the **CEO** of **Discharges** of **waste** under s 72; and
  - (c) not causing, or doing anything that is likely to cause, an offence under the **EP Act**;

except where the **Licensee** does something in accordance with a **Condition** which expressly states that a defence under s 74A of the **EP Act** may be available.

### Notification of *Material Change*

2. The **Licensee** must notify the **CEO** of any **Material Change** within 14 days of a **Material Change** occurring and such notification (which the **CEO** will make publicly available) must:
  - (a) be in writing;
  - (b) include details of the changes, including duration, infrastructure details (if any); and
  - (c) include risk analysis of the changes, including proposed controls to mitigate risks.

Nothing in this **Condition** constitutes a defence to offences under the **EP Act**.

3. The **Licensee** must provide to the **CEO** any additional information the **CEO** may reasonably require to assess the **Material Change** under **Condition 4** and in order for the **CEO** to determine if an amendment to the **Licence** is required.
4. The **Licensee** must cease carrying out, or modify, a **Material Change** in the manner and at the time required by the **CEO** if:
  - (a) the **CEO** forms the view, acting reasonably, that the **Material Change** has or may have an unacceptable impact on public health, amenity or the environment; and
  - (b) the **CEO** has provided written notice (which the **CEO** will make publicly available) to the **Licensee** specifying the grounds for the **CEO's** views.

Nothing in this **Condition** prevents the **Licensee** subsequently submitting an amendment in relation to the **Material Change**.

### Infrastructure and Equipment

5. The **Licensee** must maintain and operate the infrastructure and equipment specified in column 1 of Table 1 in accordance with the requirements specified in column 2 of Table 1.
6. The **Licensee** must ensure that the infrastructure and equipment specified in Table 1 are maintained in good working order.

**Table 1: Infrastructure and Equipment Controls Table**

	Column 1	Column 2
	Site Infrastructure	Description
1	Abattoir building, including internal and external drainage infrastructure	<ul style="list-style-type: none"> <li>All wastewater generated from abattoir processing operations drains to the premises WWTS for treatment; and</li> <li>All stormwater emanating from abattoir infrastructure drains to the premises stormwater treatment system.</li> </ul>
2	HyDAF HD-35 Wastewater treatment system (WWTS)	<ul style="list-style-type: none"> <li>Accepts all process wastewater from the abattoir floor and leachate from the lairage pens;</li> <li>Consists of an enclosed impermeable treatment tank located on concrete bunded hardstand; and</li> <li>Includes a rotary screen extractor to screen solids in the wastewater and a metal bin for the collection of solids.</li> </ul>
3	Lairage pens	<ul style="list-style-type: none"> <li>Roofed lairage pens with concrete floors and a central drain leading to a leachate sump;</li> <li>Concrete bunded hardstand manure storage area; and</li> <li>Concrete leachate sump to contain drainage and wash water from the lairage pens.</li> </ul>
4	Manure Hardstand	<ul style="list-style-type: none"> <li>Concrete bunded hardstand pad</li> </ul>
5	Leachate sump	<ul style="list-style-type: none"> <li>Concrete sump</li> </ul>
6	Fellmongering shed	<ul style="list-style-type: none"> <li>Shed with sealed concrete floor graded with a fall to the centre of the floor and blind collection sump.</li> </ul>
7	Wastewater Irrigation Storage Pond	<ul style="list-style-type: none"> <li>HDPE-lined (1.5mm) and bunded pond, with an operating freeboard of 800mm and a high water level alarm used to stop the blending pump or initiate transfer of water to irrigation; and</li> <li>Volumetric flow meter on the pump for recording volumes of water pumped to the irrigation area.</li> </ul>
8	KMB1 Monitoring Bore	<ul style="list-style-type: none"> <li>Bore use for the monitoring ambient groundwater quality.</li> </ul>

## Specified Action

7. The **Licensee** must ensure that all wastewater from the abattoir and lairage pens is captured and directed to the premises wastewater treatment system.
8. The **Licensee** must ensure that where stock is held in the lairage pens, the manure is collected from the pens on at least a weekly basis and stored on the manure hardstand.
9. The **Licensee** must ensure the collected manure stored on the manure hardstand is disposed of offsite and not stockpiled on the premises for more than two days.
10. The **Licensee** must remove all stored solid wastes from the premises by no later than 31 December each year.
11. The **Licensee** must ensure that excess salt from fellmonger activities is swept up at the end of every day and stored for reuse or disposal offsite.
12. The **Licensee** must ensure that all collection sumps, drains, and drainage screens are cleaned of accumulated solid waste daily.

13. The **Licensee** must ensure that all blood from the slaughtering of animals is collected in troughs for frozen or chilled storage onsite pending export offsite.
14. The **Licensee** must ensure that treated wastewater discharged from the **Premises** wastewater treatment system is less than or equal to the limits specified for parameters listed in Table 2.

Table 2: Emission limits to land			
Emission point reference	Parameter	Limit (including units)	Averaging period
E2	Biochemical Oxygen Demand	1,300 mg/L	Spot sample
	Total Suspended Solids	200 mg/L	
	Total Nitrogen	140 mg/L	
	Total Phosphorus	15 mg/L	

15. The **Licensee** must ensure that treated wastewater from the **Premises** wastewater treatment system is discharged to the wastewater irrigation storage pond pending transfer offsite for irrigation or lawful disposal.
16. The **Licensee** must manage the wastewater irrigation storage pond such that:
  - (a) overtopping of the pond does not occur;
  - (b) a minimum top of embankment freeboard of 800mm is maintained;
  - (c) vegetation and floating debris (emergent or otherwise) are prevented from encroaching onto pond surfaces or inner pond embankments; and
  - (d) stormwater runoff is prevented from entering the pond.

### Treated Wastewater and Groundwater Monitoring and Reporting

17. The **Licensee** must undertake the monitoring in Table 3: Monitoring Requirements according to the specifications in that table.

Table 3: Monitoring Requirements				
Monitoring of treated wastewater and groundwater				
Monitoring point reference and location on premises map	Parameter	Units	Averaging period	Frequency
E1 (Flowmeter)	Volumetric flow rate	m <sup>3</sup>	Monthly	Daily
E2	pH <sup>1</sup>	-	Spot sample	Monthly
	Total dissolved solids	mg/L		
	Total suspended solids			
	5-day Biochemical Oxygen Demand			
	Total nitrogen			
	Total phosphorus			
	Sodium			
	Calcium			
	Magnesium			
Electrical conductivity <sup>1</sup>	µS/cm			
E3	Total suspended solids	mg/L	Spot sample	Monthly
	5-day Biochemical Oxygen Demand			
	Total nitrogen			
	Total phosphorus			
KMB1	Standing Water Level <sup>1</sup>	m (AHD)	Instantaneous <sup>1</sup>	Quarterly
	pH <sup>1</sup>	-	Instantaneous <sup>1</sup> or spot sample	
	Total dissolved solids	mg/L	Spot sample	
	Total nitrogen			
	Total phosphorus			

Note 1: In-field non-NATA accredited analysis permitted.

18. The **Licensee** shall ensure that:

- (a) all water samples are collected and preserved in accordance with **AS/NZS 5667.1**; and
- (b) all laboratory samples are submitted to and tested by a laboratory with current **NATA** accreditation for the parameters being measured unless indicated otherwise in Table 3.

19. The **Licensee** shall ensure that:

- (a) monthly monitoring is undertaken at least 15 days apart; and
- (b) quarterly monitoring is undertaken at least 45 days apart.

## Monitoring and Reporting of Inputs and Outputs

20. The **Licensee** shall undertake the monitoring in Table 4: Monitoring Requirements according to the specifications in that table.

Table 4: Monitoring Requirements				
Monitoring of Inputs and Outputs				
Input / Output	Parameter	Units	Averaging period	Frequency
Animals received at the premises	Animals	Number	Annual	Each batch arriving at the premises
Animals slaughtered at the premises	Live weight of animals	Tonnes (estimated)	Annual	Estimated from number of livestock received at the premises

21. The **Licensee** must provide a report to the **CEO** specifying the data from the monitoring required under conditions 14, 17, and 20 in the form and at the times specified in Schedule 3.

## Emissions

22. The **Licensee** must not cause any **emissions** from the **Premises** except for Specified Emissions and General Emissions described in column 1 of Table 5, subject to the exclusions, limitations or requirements specified in column 2 of Table 5.

If the **Licensee** proves that it has acted in accordance with this **Condition**, it may be a defence under s 74A of the **EP Act** to proceedings for offences under the **EP Act** (including offences under s 56).

Table 5: <i>Emissions</i> Table	
Column 1	Column 2
<i>Emission Type</i>	Exclusions/Limitations/Requirements
<b>Specified <i>Emissions</i></b>	
Treated wastewater from the Premises wastewater treatment system	Subject to compliance with: <ul style="list-style-type: none"> <li>• Rows 1 and 2 of the Infrastructure Controls Table (Table 1); and</li> <li>• Conditions 15 and 16.</li> </ul>
<b>General <i>Emissions</i> (excluding Specified <i>Emissions</i>)</b>	
<p><b><i>Emissions</i></b> which:</p> <ul style="list-style-type: none"> <li>• arise from the activities on the <b><i>Premises</i></b> arising from matters set out in, or incidental to the matters set out in, the <b><i>General description</i></b> in Schedule 2; or</li> <li>• arise from a <b><i>Material Change</i></b> (except where <b><i>Condition 4</i></b> applies).</li> </ul>	<p><b><i>Emissions</i></b> excluded from General <b><i>Emissions</i></b> are:</p> <ul style="list-style-type: none"> <li>• <b><i>Unreasonable emissions</i></b>; or</li> <li>• <b><i>emissions</i></b> that result in, or are likely to result in, <b><i>Pollution, Material environmental harm</i></b> or <b><i>Serious environmental harm</i></b>; or</li> <li>• <b><i>Discharges</i></b> of <b><i>Waste</i></b> in circumstances likely to cause <b><i>Pollution</i></b>; or</li> <li>• <b><i>emissions</i></b> that result, or are likely to result in, the <b><i>Discharge</i></b> or abandonment of <b><i>Waste</i></b> in water to which the public has access; or</li> <li>• <b><i>emissions</i></b> or <b><i>Discharges</i></b> which do not comply with an Approved Policy; or</li> <li>• <b><i>emissions</i></b> or <b><i>Discharges</i></b> which do not comply with prescribed standard; or</li> <li>• <b><i>emissions</i></b> or <b><i>Discharges</i></b> which do not comply with the <b><i>Conditions</i></b> in an <b><i>Implementation Agreement or Decision</i></b>; or</li> <li>• <b><i>emissions</i></b> or <b><i>Discharges</i></b> the subject of offences under regulations prescribed under the <b><i>EP Act</i></b>, including materials <b><i>Discharged</i></b> under the <i>Environmental Protection (Unauthorised <b><i>Discharges</i></b>) Regulations 2004</i>.</li> </ul>

## Information

23. The **Licensee** must maintain accurate and auditable records in relation to:
  - (a) the calculation of fees payable in respect of this **Licence**;
  - (b) any **Material Change**;
  - (c) the date of each use and the number of animals held at the **Premises** each use; and
  - (d) weekly **Premises** inspections.
24. If an **emission** type referred under **Condition** 22 occurs on the **Premises**, then the **Licensee** must:
  - (a) investigate why the **emission** occurred;
  - (b) take all reasonable steps to prevent the **emission** occurring again;
  - (c) record the details of the investigation and all steps taken; and
  - (d) provide a copy of the record to the **CEO** within 21 days of the date **Licensee** became aware that the **emission** had occurred.
25. The **Licensee** must record the number and details of any complaints received by the **Licensee** relating to **emissions** and **Discharges** from the **Premises**, and any action taken by the **Licensee** in response to the complaint. Details of complaints must include:
  - (a) an accurate record of the concerns or issues raised, for example, a copy of any written complaint or a written note of any verbal complaints made;
  - (b) the name and contact details of the complainant, if provided by the complainant;
  - (c) the date of the complaint; and
  - (d) the details and dates of the actions taken by the **Licensee** in response to the complaints.
26. The **Licensee** must submit to the **CEO** within 90 days after the **Anniversary Date**, an **Annual Audit Compliance Report** indicating the extent to which the **Licensee** has complied with the **Conditions** in this **Licence** for the **Annual Period**.
27. The **Licensee** must comply with a **CEO Request**, within 7 days from the date of the **CEO Request** or such other period specified in the **CEO Request**.



# Definitions and Interpretation

## Definitions

In this **Licence**, the following terms have the following meanings:

**AS/NZS 5667.1** means the Australian Standard AS/NZS 5667.1 Water Quality – Sampling – Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples.

**Averaging period** means the time over which a limit is measured, or a monitoring result is obtained;

**Anniversary Date** means 30th June of each year.

**Annual Audit Compliance Report** means a report in a format approved by the CEO as presented by the Licensee or as specified by the CEO from time to time and published on the Department's website.

**Annual Period** means a 12 month period commencing from 1 July until 30 June in the following year.

**CEO** for the purposes of notification means:

Chief Executive Officer  
Department Div.3 Pt.V EP Act  
Locked Bag 33  
CLOISTERS SQUARE WA 6850  
[info@der.wa.gov.au](mailto:info@der.wa.gov.au)

**CEO Request** means a request made by the **CEO** to the **Licensee** in writing, sent to the **Licensee's** address for notifications, as described at the front of this **Licence**, in relation to:

- (a) information, records or reports in relation to specific matters in connection with this **Licence** including in relation to compliance with any **Conditions** and the calculation of fees (whether or not a breach of **Condition** or the **EP Act** is suspected); or
- (b) reporting, records or administrative matters:
  - (i) which apply to all **Licences** granted under the **EP Act**; or
  - (ii) which apply to specified categories of **Licences** within which this **Licence** falls.

**Condition** means a **Condition** to which this **Licence** is subject under s 62 of the **EP Act**.

**Department** means the department established under s.35 of the Public Sector Management Act and designated as responsible for the administration of Division 3 Part V of the Environmental Protection Act 1986.

**Discharge** has the same meaning given to that term under the **EP Act**.

**Emission** has the same meaning given to that term under the **EP Act**.

**Environmental harm** has the same meaning given to that term under the **EP Act**.

**EP Act** means the *Environmental Protection Act 1986* (WA).

**General description** means the description of activities and operations carried out on the **Premises** as set out in Schedule 2 of this **Licence**.

**Implementation Agreement or Decision** has the same meaning given to that term under the **EP Act**.

**Licence** refers to this document, which evidences the grant of **Licence** by the **CEO** under s 57 of the **EP Act**, subject to the **Conditions**.

**Licensee** refers to the occupier of the **Premises** being the person to whom this **Licence** has been granted, as specified at the front of this **Licence**.

**Material Change** means a change to the activities carried out on the **Premises** as described in the **General description** set out in Schedule 2 and:

- (a) that may result in an increased risk to public health, amenity or the environment; and
- (b) includes the types of changes specified in Schedule 2; and
- (c) does not include the excluded changes specified in Schedule 2.

**Material environmental harm** has the same meaning given to that term under the **EP Act**.

**NATA** means National Association of Testing Authorities.

**Pollution** has the same meaning given to that term under the **EP Act**.

**Premises** refers to the **Premises** to which this **Licence** applies, as specified at the front of this **Licence** and as shown on the map in Schedule 1 to this **Licence**.

**Serious environmental harm** has the same meaning given to that term under the **EP Act**.

**Unreasonable emission** has the same meaning given to that term under the **EP Act**.

**Waste** has the same meaning given to that term under the **EP Act**.

## Interpretation

In this **Licence**:

- (a) the words 'including', 'includes' and 'include' will be read as if followed by the words 'without limitation';
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a **Condition**, each row in a table constitutes a separate **Condition**; and
- (d) any reference to an Australian or other standard, guideline or code of practice in this **Licence** means the version of the standard, guideline or code of practice in force at the time of granting of this **Licence** and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the **Licence**.

## Examples of Material Change

- Changes in the maximum number of animals held exceeding 10%;
- Changes to the control or ownership of the infrastructure or equipment within the **Premises**;
- Removal of infrastructure and equipment; and
- Changes to the site layout of infrastructure and equipment specified on the plans in Schedule 1.

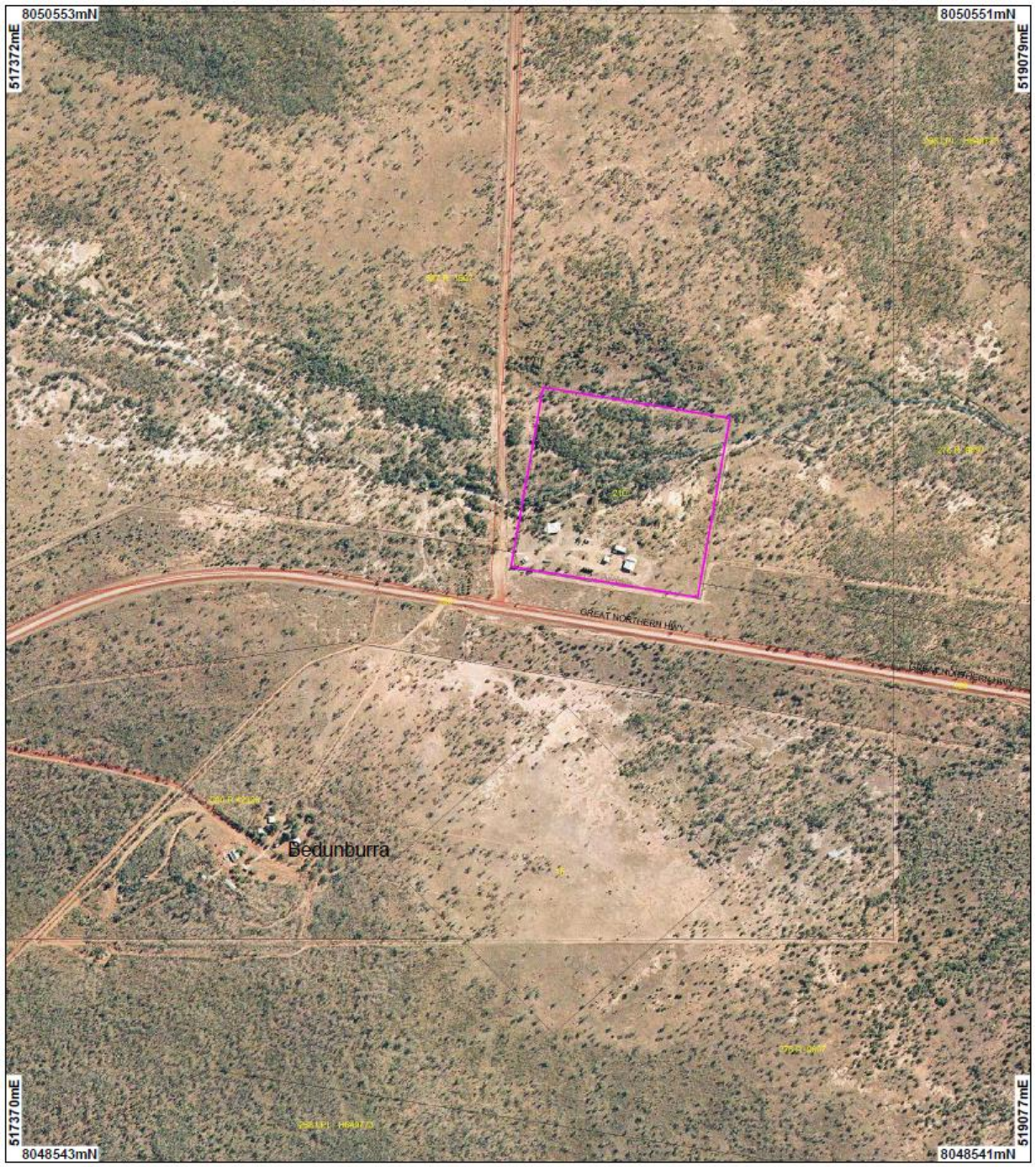
## Non-Material Change

- Improvements or additions to infrastructure and equipment that decrease the risk of emissions and discharges.

# Schedule 1: Plans

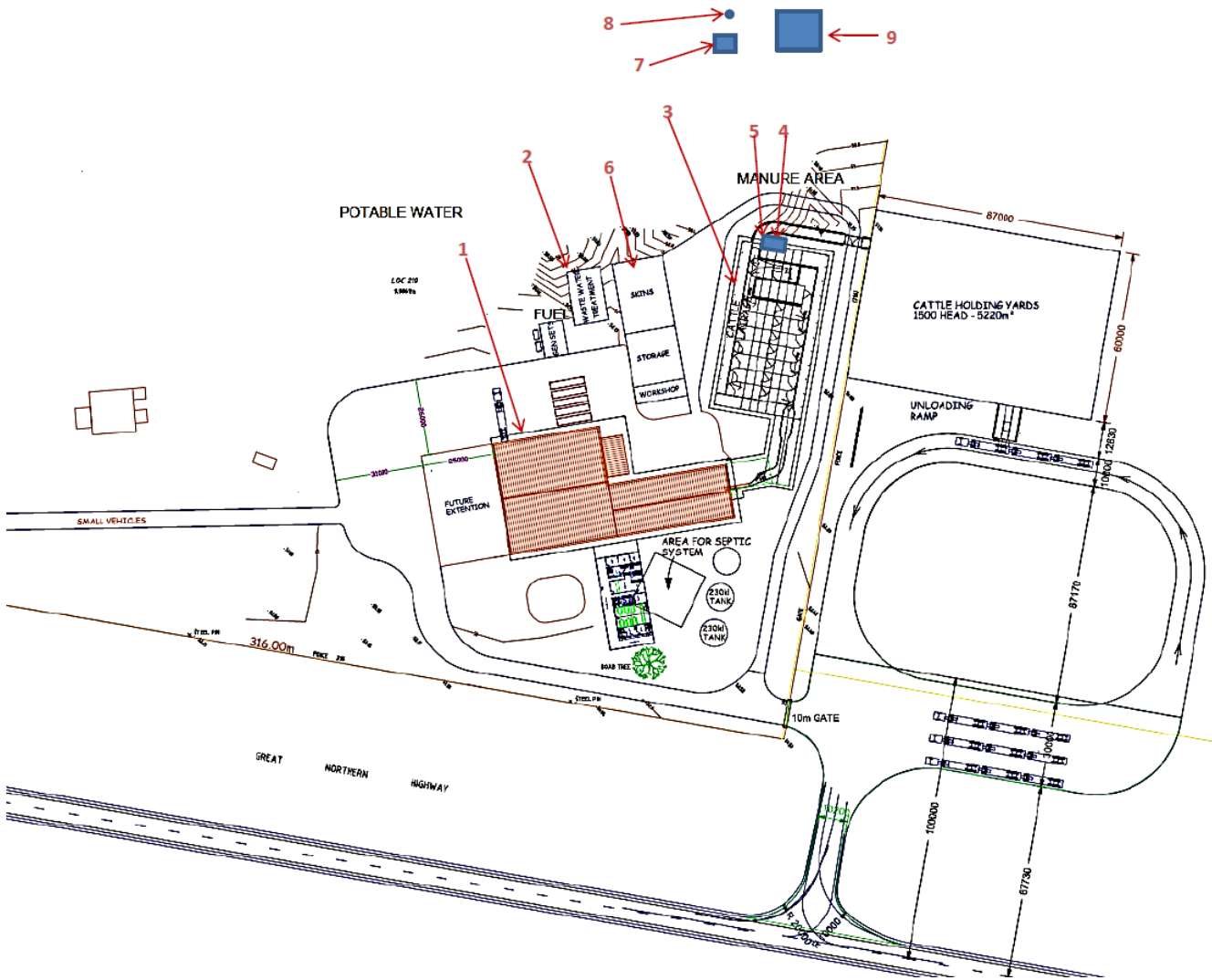
## Premises Map

The **Premises** is shown in the plan below. The pink line depicts the boundary to the **Premises**.



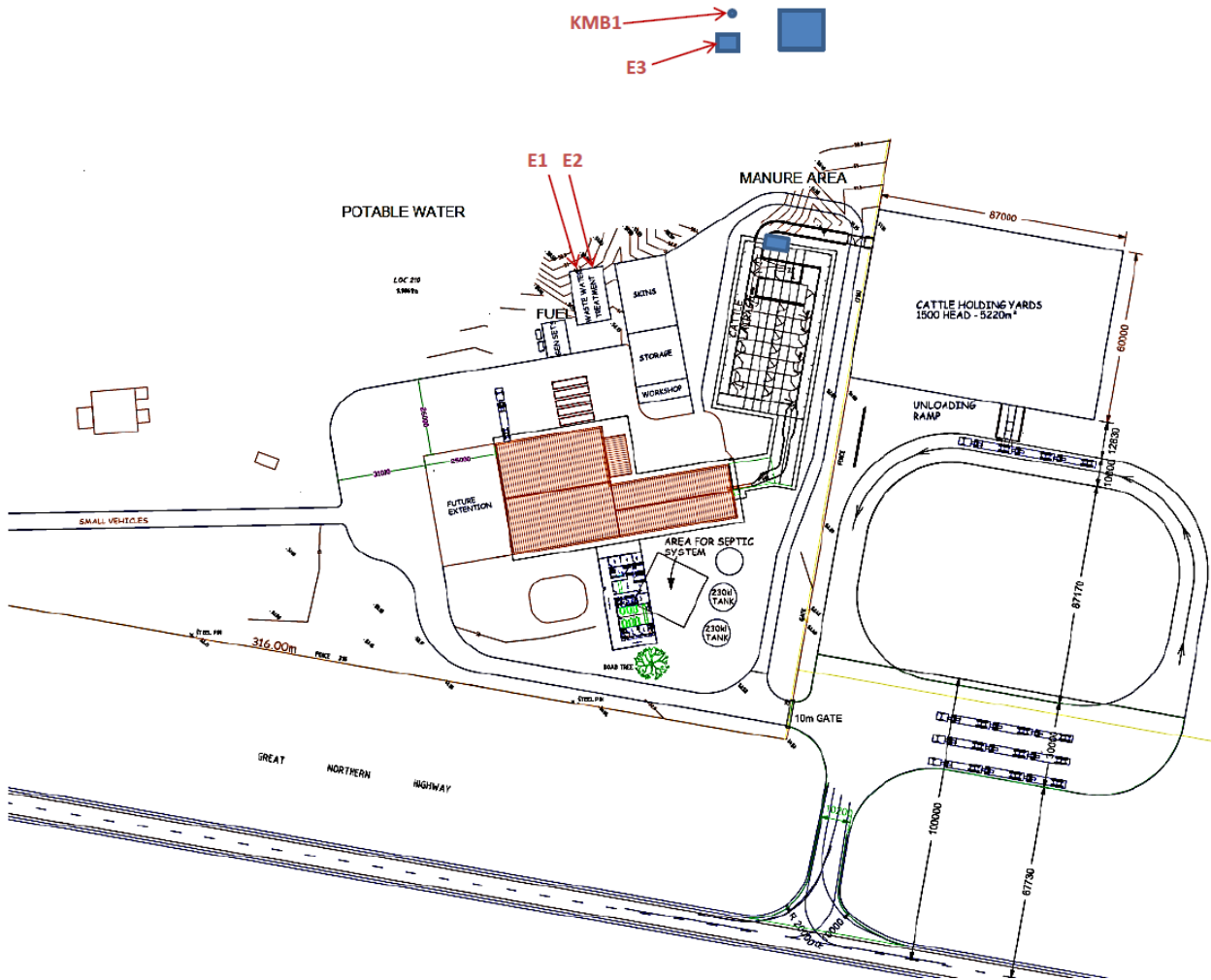
# Premises Layout

The *Premises* layout is shown in the plan below.



# Treated Wastewater and Groundwater Monitoring Locations Plan

The **Premises** monitoring locations are shown in the plan below.



## Schedule 2: General description

At the time of assessment, the following activities and operations were considered in the determination of the risk and related **Conditions** for the **Premises**.

The **Licensee** is carrying out activities at the **Premises** which fall within the meaning of Prescribed **Premises** under the **EP Act**. The **Premises** constitutes a Category 15: Abattoir: premises on which animals are slaughtered, a Category 55: livestock saleyard or holding pen, and a Category 83: Fellmongering: premises on which animal skins or hides are dried, cured or stored. The maximum number of animals permitted on the premises is 77,000 animals. The infrastructure and equipment situated on the **Premises** are detailed in Table 6:

Table 6: Infrastructure and equipment situated on the <i>Premises</i>		
	Infrastructure	Plan reference
1	Abattoir	Premises Map – reference 1
2	Hy-Daf HD 35 WWTS	Premises Map – reference 2 Treated Wastewater and Groundwater Monitoring Locations Plan – reference E1 (Outflow meter) and reference E2 (Sample point)
3	Livestock holding pens (lairage)	Premises Map – reference 3
4	Manure hardstand (concrete bunded)	Premises Map – reference 4
5	Leachate sump (concrete bunded)	Premises Map – reference 5
6	Fellmongering shed	Premises Map – reference 6
7	Treated wastewater irrigation storage pond	Premises Map – reference 7 Treated Wastewater and Groundwater Monitoring Locations Plan – reference E3
8	KMB1 Monitoring Bore	Premises Map – reference 8 Treated Wastewater and Groundwater Monitoring Locations Plan – reference KMB1
9	Freshwater storage pond	Premises Map – reference 9

### Site layout

The infrastructure and equipment are set out on the **Premises** in accordance with the premises layout specified on the map in Schedule 1.

## Schedule 3: Monitoring and Reporting

### Treated Wastewater and Groundwater Monitoring and Reporting

#### Locations

Locations E1, E2, E3 and KMB1 as shown on the Treated Wastewater and Groundwater Monitoring Locations plan.

#### Treated Wastewater and Groundwater Monitoring reporting periods

Reported annually to the **CEO** within 30 days of the **Anniversary Date**.

#### Treated Wastewater and Groundwater Monitoring Report

The monitoring report must contain:

- the sampling or measurement date;
- the raw monitoring data for the sampling event in tabulated form; and
- time series graphical plots of the data generated from the earliest recorded data point.

### Inputs and Outputs Monitoring and Reporting

#### Inputs and Outputs Monitoring reporting periods

Reported annually to the **CEO** within 30 days of the **Anniversary Date**.

#### Inputs and Outputs Monitoring Report

The monitoring report must contain the number of animals received at the **Premises** per annum. The Licensee must record and report the number of animals in each batch arriving at the **Premises**. Additionally, the Licensee must record and report the estimated live weight (in tonnes) of animals slaughtered annually at the **Premises**.





## Application for Licence

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

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<b>Applicant:</b>	Kimberley Meat Company Pty Ltd
<b>ACN:</b>	159 933 392
<b>Licence Number:</b>	L8977/2016/1
<b>Works Approval Number:</b>	W5711/2014/1
<b>File Number:</b>	DER2016/001019
<b>Premises:</b>	Colourstone Abattoir 210 Great Northern Highway ROEBUCK WA 6725 Lot 210 on Plan 186082 Dampier Location 210
<b>Date of report:</b>	Monday, 31 October 2016
<b>Status of Report</b>	Final

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## Definitions of terms and acronyms

Term	Definition
Assigned noise level	means noise level not to be exceeded at receiving premises, defined by Part 2, Division 1 of the Environmental Protection (Noise) Regulations 1997
Category/Categories (Cat.)	categories of prescribed premises described in Schedule 1 of the EP Regs
DER	Department of Environment Regulation
EP Act	means the <i>Environmental Protection Act 1986</i>
EP Regs	means the <i>Environmental Protection Regulations 1987</i>
Noise	means unwanted sound and is defined in the EP Act to include vibration of any frequency, whether transmitted through air or any other physical medium
Noise Regulations	Environmental Protection (Noise) Regulations 1997
PM	Particulate Matter
PM <sub>10</sub>	Used to describe particulate matter that is smaller than 10µm in diameter.
Premises	as defined in the EP Act. Means residential, industrial or other premises of any kind whatsoever and includes land, water, and equipment
Prescribed Premises	premises of the types listed in Schedule 1 of the EP Regs.

## 1. Purpose and Scope of Assessment

Kimberley Meat Company Pty Ltd (the Applicant) has submitted an application for a new licence (the Application) to operate the newly constructed Colourstone Abattoir located at Lot 210 on Great Northern Highway in the Shire of Derby-West Kimberley. This Decision Report assesses emissions and discharges associated with the operation of the abattoir and associated prescribed premises categories outlined in Table 1 below.

## 2. Background

Works Approval W5711/2014/1 was granted to the Applicant on 9 October 2014 to allow construction of the Colourstone Abattoir, which included livestock holding pens and fellmonger activities. Construction compliance documents were received by DER on 23 July 2016. The Applicant is now seeking approval to operate the prescribed activities listed in Table 1.

**Table 1: Prescribed Premises Categories**

Classification of Premises	Description	Production for Capacity	Schedule 1 Category Threshold
Category 15	Abattoir: premises on which animals are slaughtered.	32 340 tonnes per year	1 000 tonnes or more per year
Category 55	Livestock saleyard or holding pen: premises on which live animals are held pending their sale, shipment or slaughter.	77 000 animals per year	10 000 animals or more per year
Category 83	Fellmongering: premises on which animal skins or hides are dried, cured or stored.	77 000 skins or hides per year	1 000 skins or hides or more per year

## 3. Overview of Colourstone Abattoir

### 3.1 Infrastructure

The Colourstone Abattoir infrastructure, as it relates to Category 15, 55 and 83 activities, is detailed in Table 2 and with reference to the Site Plan (attached in the Issued Licence).

**Table 2: Colourstone Abattoir infrastructure**

	<b>Infrastructure</b>
	<b>Prescribed Activity Category 15</b>
Animals are processed on the abattoir floor to produce meat for human consumption	
1	Animal processing on abattoir floor (includes slaughtering, hide removal, eviscerating and trimming, cooling, cutting and deboning, packing, and storage prior to export from the abattoir load-out area)
2	HyDAF HD-35 Wastewater Treatment System (WWTS) including solids trap and discharge point
	<b>Prescribed Activity Category 55</b>
Animals are held in the livestock pens pending arrival at the abattoir floor	
1	Livestock holding pens (lairage), including unloading infrastructure, drainage and race from lairage to abattoir floor
2	Lairage manure hardstand and leachate sump
	<b>Prescribed Activity Category 83</b>
Salting of cattle skins/hides to cure and preserve them	
1	Fellmongering shed where processing and storage of hides occurs

### 3.2 Operational Aspects

Colourstone Abattoir will process animals (predominantly cattle from Kimberley cattle stations) for sale or export to domestic and overseas markets. By-products (offal, skins, blood, etc.) will also be processed, packaged, and sold. The abattoir will typically operate from March to December in each year, from Monday to Friday between 6am and 3pm. It is unlikely the abattoir will operate during January and February each year as mustering and loading of cattle in the Kimberley during the wettest months of the year is not possible due to access restrictions. The abattoir will, therefore, operate for around 44 weeks (220 days) of the year. With a daily design capacity of 350 cattle per day (77,000 cattle per annum) and an average live weight of 420kg per animal, the annual design capacity of Colourstone Abattoir is estimated to be 34,340 tonnes per year.

Power for the abattoir is provided by a stand-alone generator set supplied by a 50,000L bunded diesel tank located at the rear of the abattoir. A 100 Horsepower True Steam diesel-fired pipe boiler has been installed at the abattoir which allows heating of abattoir water to 85 or 65 degrees Celsius to enable sterilisation of knives and processing equipment.

A WWTS (HyDAF HD-35) will treat wastewater generated by the abattoir, which will be blended with bore water in an underground concrete tank prior to being pumped to a 370kL High-Density Polyethylene (HDPE) lined wastewater storage pond located at the rear of the abattoir pending irrigation to land. The irrigation proposal on Yeeda Station is managed by a separate entity, Yeeda Pastoral Company Pty Ltd (the legal occupier of Yeeda Station), and as such, is subject to a separate operating license to manage the prescribed category 61 (liquid waste facility) operations.

### 3.2.1 Abattoir

Cattle will be delivered to the abattoir via trucks and will be held in the holding pens (lairage) for up to 24 hours prior to slaughter. From the lairage pens, cattle will enter the abattoir building and move to the stunning and slaughter area. Cattle are stunned, and the throat is then cut. Blood is collected in a trough and pumped to storage units, to be frozen or chilled and sold for rendering.

The carcass then moves to the dressing stage where the head, hooves, and hide are removed. The head and hooves are collected and frozen for sale / export. Hides are stacked on pallets and taken to the hide shed for processing (fellmonger activities discussed below). Carcasses are then progressed along the abattoir chain to be eviscerated, which involves removal of the stomach and intestines (offal). Edible and inedible offal are separated, processed and frozen according to market requirements. No rendering will occur in the initial stages of operations at Colourstone Abattoir; any product suitable for rendering will be recovered and frozen for export to be rendered at alternative premises.

At this stage, the carcass is inspected by Australian Quarantine Inspection Service (AQIS) / Department of Agriculture. AQIS Inspectors determine if the carcass is fit for export. Fit for export carcasses are moved along the chain and then split into two halves and held in the chiller. Once chilled to an acceptable temperature the carcass moves into the boning rooms where it is cut down (meat separated from the bone), or it is covered and frozen whole ready for loading into containers. The de-boned product is boxed and frozen. Bones will be also boxed and frozen. Condemned carcasses unfit for export will be sent to a separate chiller and then processed and sold as pet food. The plant is designed to process all products which are then packed into 20 or 40-foot containers and loaded onto trucks for delivery off-site.

### 3.2.2 HyDAF HD-35 Wastewater Treatment System

The waste water treatment system (WWTS) is designed to treat peak flows of up to 30m<sup>3</sup> per hour of wastewater. The Applicant estimates that around 200m<sup>3</sup> of wastewater per day will be generated from the abattoir and sent to the WWTS. From this, approximately 6 to 10 tonnes of sludge will be produced each day, requiring regular removal by a licensed controlled waste contractor. A layout diagram for the WWTS is shown below in Figure 1.

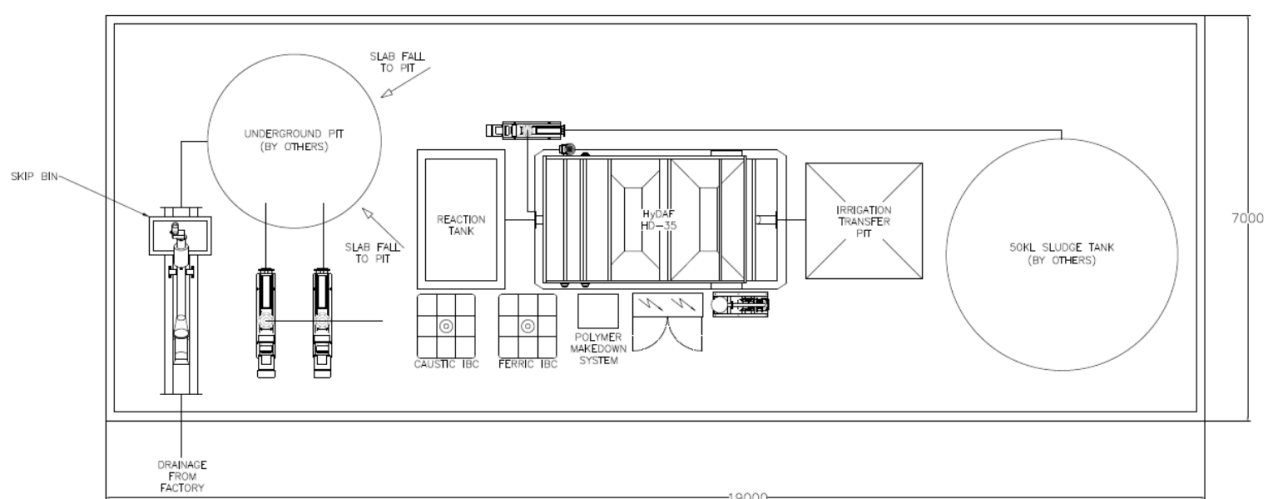


Figure 1: Colourstone Abattoir WWTS schematic

The WWTS process involves initial screening of solid matter greater than 1mm, which will occur at the start of the treatment process, followed by short-term wastewater balancing, chemical coagulation (addition of ferric chloride and sodium hydroxide), flocculation (addition of a polymer), pH control, and Dissolved Air Flotation (DAF). The DAF process clarifies the wastewater by removing suspended solids such as oil and other solid material. This involves dissolving air in water under pressure, then releasing the air/water at atmospheric pressure in a flotation tank. The released air forms tiny bubbles which adhere to the suspended solids and cause it to float to the surface where it can be removed by skimming. The solids to be removed by skimming will be scraped from the surface of the DAF tank into an integrated sludge hopper, and then pumped to a 50,000L sludge tank. Any settled sludge in the DAF tank will also be regularly pumped to the sludge tank as required. Sludge will be removed offsite by licensed contractors as required.

Ferric chloride in a 40% solution will be delivered and stored in 1,000L Intermediate Bulk Containers (IBCs), and sodium hydroxide in a 25 to 50% solution will be stored in 15L buckets. Ferric chloride acts as a coagulant to precipitate emulsified fats and protein. Sodium hydroxide will ensure a constant pH is maintained at around 6.5 to 7. A polymer is also added to aid the separation of the flocculants. Approximately 100L of ferric chloride, 15L of sodium hydroxide and 1.5L of the polymer will be added daily during the treatment process (assuming wastewater flows of 200m<sup>3</sup> per day). Chemicals will be stored on bunded hardstand areas.

Treated wastewater discharged from the WWTS will be metred (flow meters on the inlet and outlet of the WWTS) and will then be pumped to a HDPE-lined storage pond at the rear of the abattoir. From the storage pond, wastewater will be pumped and blended with bore water at a ratio of approximately one to two (1:2) within a concrete lined storage tank. From the storage tank blended wastewater will then will be pumped via pipeline to a centre pivot irrigator for irrigation of a 15ha fodder crop at the Yeeda Pastoral Station located next door to the abattoir. Yeeda Pastoral Company Pty Ltd has applied to DER for separate approvals to allow irrigation of treated wastewater from Colourstone Abattoir to land (refer to L8980/2016/1).

The expected performance of the Colourstone WWTS can be seen in Table 3.

**Table 3: Colourstone Abattoir WWTS – expected water quality outputs**

Parameter	Concentration in treated wastewater (mg/L)		
	Min	Average	Max
Biochemical Oxygen Demand (BOD)	600	900	1300
Suspended Solids	30	100	200
Nitrogen	75	110	140
Phosphorous	5	10	15

Based on a WWTS design capacity of 200m<sup>3</sup> per day and an expected 220 operational days (44 weeks per year), the annual volume of treated wastewater generated from the abattoir will be approximately 44,000 m<sup>3</sup>. Treated wastewater will be blended with bore water to produce an effluent that is suitable for irrigation to land (fodder crop) on Yeeda Station. Approximately 106,000 m<sup>3</sup> of operational purposes bore water will be blended with 44,000 m<sup>3</sup> of treated wastewater to produce 150,000 m<sup>3</sup> of irrigation water (annual estimates). The quality of blended wastewater to be irrigated is shown in Table 4.



**Table 4: Coloustone Abattoir WWTS – blended irrigation water quality**

Parameter	Concentration in Irrigation Water (mg/L)		
	Min	Average	Max
BOD	174	261	377
Suspended Solids	9	29	58
Nitrogen	22	32	41
Phosphorous	1.5	3	5

The annual nutrient loading rates from applying up to 150,000 m<sup>3</sup> per year of treated wastewater comprising the average irrigation water quality given in Table 4 to 15ha of land at Yeeda Station is approximately 320kg/ha/year of nitrogen and approximately 30 kg/ha/year of phosphorus. The annual loading of BOD will be 7.5kg/ha/day. In addition, irrigation of treated wastewater at Yeeda will be rotated each year among four 15ha irrigation plots, such that treated wastewater is applied to each centre pivot crop for one year in every four years, to reduce the risk of nutrient overloading of irrigation plots. The operating licence issued for Yeeda Station will include nutrient loading limits and reporting requirements that will apply to irrigation practices.

### 3.2.3 Lairage Pens

The maximum number of cattle to be held in the abattoir lairage pens at any one time is 350 head. The lairage pens are covered but open on all four sides (enclosed by railings). Stormwater falling on the roof will fall on a concrete paved area graded away from the pens and will then run into the premises stormwater drainage system. The pens are cleaned out weekly via a dry process using a small machine (bobcat). Manure will be collected and stored temporarily (less than 48 hours) at the lairage manure hardstand located at the rear of lairage pens. Manure will then be transported in bulk to Yeeda Station for composting on a dedicated manure composting pad. Each month the pens will be dry cleaned and then washed out using treated wastewater from the abattoir WWTS. Wash water will drain to a leachate sump at the northern end of the pens and will then be pumped from the sump to the WWTS for treatment. The lairage pens also have an irrigated wash pen to allow washing of animals prior to export overseas (export requirement). Water from the irrigated wash pen also drains to the leachate sump.

### 3.2.4 Fellmongering

The fellmonger process involves the salting of skins to cure and preserve them. Fellmongering will occur in a separate shed at the abattoir. The process involves fresh skins being forklifted from the main abattoir building to the skins shed. Staff then place skins into one or more tumblers, hide salt is added, and the skins are tumbled to ensure a thorough coating of salt. The skin is then discharged from the tumbler and stacked onto pallets ready for loading into shipping containers. Once salted, the hide is considered pickled and as such requires no refrigeration. Containers of hides will be exported off-site once the containers are full. Any excess salt that falls onto the floor will be swept up and reused in the next load. Cleaning of the skins shed is a dry process; no water will be used.

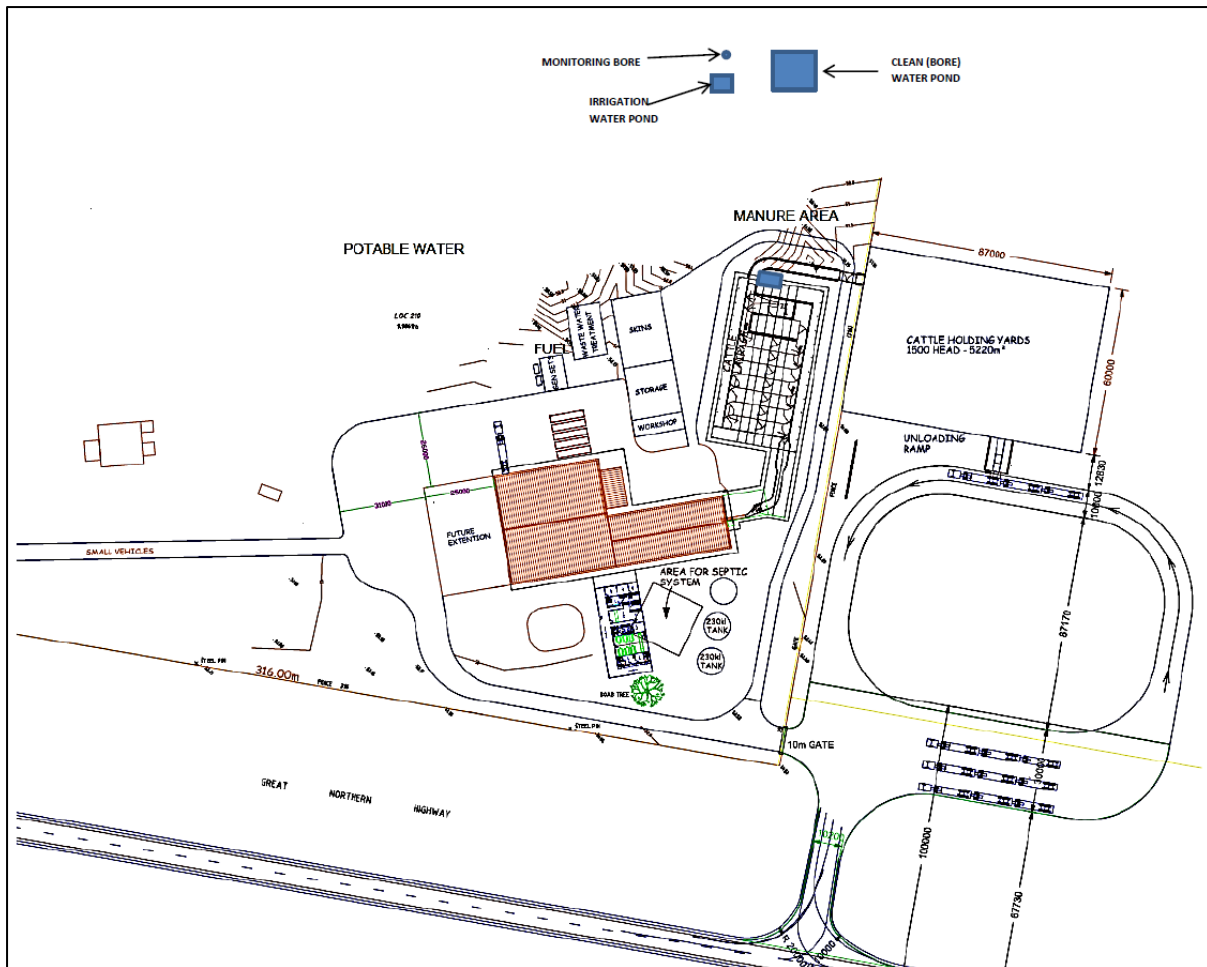


Figure 2: Colourstone abattoir premises layout plan

**Key Finding: The Delegated Officer has reviewed the information regarding the Application and has found:**

1. *The Applicant proposed to operate an abattoir and associated prescribed activities listed in Table 1.*
2. *The number of animals that will be processed at the abattoir is 77,000 animals per year.*
3. *Kimberley Meat Company Pty Ltd is the legal occupier of Lot 210 on Plan 186082 on Great Northern Highway.*

## 4. Legislative Context

### 4.1 Planning Approval

The Shire of Derby-West Kimberley (the Shire) was consulted on 22 July 2016 to determine if the Applicant had obtained the relevant planning approvals and to seek comment on the proposal. Advice from the Shire indicated that, prior to construction of the abattoir, the Shire did not exercise any statutory planning controls over the area of land comprising the abattoir and Yeeda Station and, as such, no Development Approval was required.

The Shire has since resolved to prepare a whole of district Local Planning Scheme, and an Interim Development Order (IDO) encompassing all land tenure within the Shire has been approved for the period while the new scheme is being prepared. The granting of the IDO does not apply retrospectively, therefore, should there be any changes to the proposal, Development Approval may be required.

## 4.2 Part V of the EP Act

### 4.2.1 Works Approvals

Works Approval W5711/2014/1 was granted to the Applicant by DER on 9 October 2014 to allow construction of the Colourstone Abattoir, which included livestock holding pens and fellmonger activities. Construction compliance documents were submitted to DER on 23 July 2016.

**Key Finding: The Delegated Officer has reviewed the information regarding the Application and has found:**

- 1. Planning / development approval was not required from the Shire of Derby West Kimberley at the time of construction of the abattoir. However, any changes to the premises in future may require planning approval;*
- 2. Construction compliance documents for Works Approval W5711/2014/1 were submitted by the Applicant on 23 July 2016 indicating that the works have been completed as approved by DER.*

## 5. Consultation

The Shire of Derby-West Kimberley was consulted on 22 July 2016 to seek comment on the Colourstone Abattoir proposal. Advice received from the Shire advised of planning status of the proposal (refer section 4.1 above) and indicated that they are generally supportive of the project.

Bidan (also known as Bedunburra) Aboriginal Community (closest residential development) was consulted on 22 July 2016 to seek comment on the abattoir proposal. No submissions were received.

## 6. Location and Siting

### 6.1 Siting Context

Colourstone Abattoir is located within the Shire of Derby-West Kimberley approximately halfway between Broome and Derby (110km from each township).

### 6.2 Residential and Sensitive Premises

The distances to residential and sensitive receptors are as follows:

**Table 5: Receptors and distance from prescribed activity**

Residential and Sensitive Premises	Distance from Prescribed Activity
Residential Premises – Bidan (Bedunburra) Aboriginal Community – approximately six residences	600m (measured from southwest corner of abattoir building)
<b>Consideration of separation distance</b>	<i>The Delegated Officer considers that there is sufficient separation distance between the prescribed activity and the residential premises.</i>

### 6.3 Specified Ecosystems

**Table 6: Specified ecosystems**

Specified ecosystems	Distance from Prescribed Premises
Perennial Lake	1,500 m to the south-east

### 6.4 Groundwater and water sources

**Table 7: Groundwater and water sources**

Groundwater and water sources	Distance from Premises	Environmental Value
Public Drinking Water Source Area	70km east (Broome Water Reserve Priority 1 Drinking Water Source Area)	Public water source area proclaimed under the Country Areas Water Supply Act 1947
Groundwater is considered fresh	Depth to groundwater encountered at approximately 15m below ground level. One groundwater monitoring bore is located at the rear of the abattoir  Four groundwater monitoring bores located within 1 - 2km of premises (on neighboring Yeeda Pastoral Station surrounding irrigation area).	Water is not used for potable purposes but is used for stock water supplies and irrigation purposes.
Ephemeral creek line	Located approximately 80m north of the Abattoir building.	Creek is normally dry and runs for short durations of up to a few hours following medium to heavy rainfall.

### 6.5 Soil Type

Soil types in the Colourstone area are described as sand plain with longitudinal sand dunes and some active drainage-ways. Dominant soils are red earthy sands, with dunes and hummocks of red sands. Some soils occur in lower sites often with a heavy surface layer of ferruginous gravel.

### 6.6 Meteorology

The closest Bureau of Meteorology weather station to Colourstone Abattoir is located at Derby Aero approximately 60km northwest. In the absence of any other weather data available for Colourstone Abattoir, a brief review of the meteorology data from Derby Aero station has been performed.

### 6.6.1 Wind direction and strength

The average annual 9am wind direction in Derby blows from the east and south-east for around 35% of the year and south for around 15% of the year. Wind speeds at 9am range predominantly from 10 to 20km per hour but can reach up to 30km per hour at times. The average annual 3pm wind direction in Derby blows northwest for up to 45% of the year. Wind speeds are predominantly recorded at between 10 and 20km throughout the year, with north westerlies reaching up to 30km per hour throughout the year.

### 6.6.2 Regional climatic aspects

The West Kimberley Region within which Colourstone Abattoir and Derby Township are located experiences a semi-arid climate. Like most parts of the Australian tropics, the Region has two seasons: a dry season and a wet season. The West Kimberley is susceptible to tropical cyclones and these, along with the equally unpredictable nature of summer thunderstorms, play a large part in the erratic nature of the rainfall received in the area. A high average daily evaporation rate of around 9.2mm per cubic metre (annual average) is experienced in Derby.

### 6.6.3 Rainfall and temperature

The dry season is from April to November with nearly everyday clear and maximum temperatures averaging around 34 °C. The wet season extends from December to March, with maximum temperatures of around 38 °C, rather erratic tropical downpours and high humidity. Derby's annual rainfall average is 691 mm, 76% of which falls from January to March.

**Key Findings: The Delegated Officer has reviewed the information regarding the environmental context of the Application and has found:**

1. *A separation distance of 600m exists between the Colourstone Abattoir and the nearest residential receptor;*
2. *The closest surface water body is an ephemeral creek approximately 80m north of the Premises; and*
3. *Groundwater is found at 15m depth and is used for stock water supplies and irrigation.*

## 7. Risk Assessment

### 7.1 Emission, pathway, receptor identification

Identification of key potential emissions, pathways, receptors and impacts are set out in Table 8 below. Table 8 also identifies which potential emissions and impacts will be progressed to a full risk assessment. Some potential emissions/impacts may not receive a full risk assessment if a potential receptor or pathway cannot be identified.

**Table 8: Identification of key emissions**

			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
Source (see Section 9 for infrastructure references)	Abattoir - processing of animals	Stunning and killing, hide removal, eviscerating and trimming, cutting and deboning, packing and storage	Odour	Residential Premises – Bidan Aboriginal Community 600m southwest of abattoir	Air / Wind dispersion	<p>Odour emissions have the potential to impact amenity and wellbeing.</p> <p>Individual responses to odour emissions may vary depending on an individual's age, health status, sensitivity, and odour exposure patterns. Perceived odour intensity may increase or decrease on exposure.</p> <p>Community response to an odour can include annoyance, potentially leading to stress, and loss of amenity. Exposure to repeated odour events can create a nuisance effect.</p>	Yes	The Colourestone Abattoir will operate from March to December in each year, processing up to 77,000 animals per year. The abattoir processing operations have the potential to generate significant odour emissions from waste products if not managed appropriately, which may impact amenity and wellbeing of nearby receptors.

			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
			Noise			Noise emissions have the potential to impact amenity and wellbeing.	No	Noise emissions are not expected to be significant, as the main source of noise will be cattle trucks, refrigeration trucks and the cattle in holding pens. Noise from these types of sources is considered typical for a rural area. The abattoir will operate Monday to Friday during daylight hours only.
			Solid and liquid (leachate) wastes	Ephemeral creek line 80m north of abattoir.	Direct discharge	<p>Ecosystem health:</p> <p>Contaminated wastewater and leachate emissions can result in a potential or actual alteration to the environment. They have the potential to disrupt ecological processes, have an impact on the aesthetic appeal of waters, and cause eutrophication.</p> <p>Potential contamination of soils, surface water, and groundwater with excess organic matter and nutrients.</p>	Yes	Solid and liquid wastes produced during the operation of the abattoir have the potential to impact the adjacent ephemeral creek if not stored, treated and disposed of appropriately. Solid and liquid wastes from the abattoir are likely to be high in nutrients and contain a high biochemical oxygen demand.

			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
	HyDAF HD-35 WWTS	Solid and liquid wastes (screened solids, sludge, and wastewater) from the operation of the WWTS	Odour	Residential Premises – Bidan Aboriginal Community 600m southwest of abattoir	Air / wind dispersion	Odour has the potential to impact amenity and wellbeing	Yes	The generation of odour from the operation of the WWTS could impact sensitive receptors at nearby Bidan Community (residential premises) if the Hy-DAF WWTS and associated waste storage infrastructure is not managed appropriately.
			Solid and liquid (leachate) wastes (from unplanned spills of wastewater or sludge, overflows from sumps or rupture of pipes)	Ephemeral creek line 80m north of abattoir	Direct discharge	<p>Ecosystem health:</p> <p>Contaminated wastewater and leachate emissions can result in a potential or actual alteration to the environment. They have to potential to disrupt ecological processes, have an impact on the aesthetic appeal of waters, and cause eutrophication.</p> <p>Potential contamination of soils, surface water, and groundwater with excess organic matter and nutrients.</p>	Yes	Potential discharges to land from the operation of the WWTS may impact upon ecosystem health of the adjacent creek, or contaminate soils surrounding the abattoir. Solid and liquid wastes from the WWTS are likely to be high in nutrients and contain a high biochemical oxygen demand.



			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
	<b>Livestock holding pens (lairage)</b>	Holding of cattle (up to 350 animals per day) prior to entry to abattoir via race	Odour	Residential Premises – Bidan Aboriginal Community 600m southwest of abattoir	Air / wind dispersion	Odour emissions have the potential to impact amenity and wellbeing.	Yes	Odour from manure accumulating in the holding pens has the potential to impact nearby residential premises (Bidan Community) if not managed appropriately.
			Noise			Noise emissions have the potential to impact amenity and wellbeing.	No	Noise emissions are not expected to be significant, as the main source of noise will be cattle in holding pens and cattle trucks unloading cattle. These types of noises are considered typical for a rural area. The abattoir will operate Monday – Friday during daylight hours only.
			Dust			Dust can impact amenity as visible dust plumes may result in deposition of material on property, vehicles, and equipment. Public health effects can include acute effects such as allergy reactions and asthma, and chronic effects such as reduced respiratory function. High concentrations of dust can also smother vegetation and cause sedimentation / turbidity of nearby waterways.	No	The lairage pens are concrete lined and are not expected to create a significant amount of dust that would impact on nearby receptors (community or environment).

			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
	<b>Lairage manure hardstand</b>	Clean up of manure from pens (using bobcat) and storage on concrete hardstand prior to disposal offsite. Wet cleaning of pens using water and storage of leachate in the sump. Washwater from cattle irrigation pen.	Odour	Residential Premises – Bidan Aboriginal Community 600m southwest of abattoir	Air / wind dispersion	Odour has the potential to impact amenity and wellbeing	Yes	Odour from manure stored at the hardstand may impact nearby residential premises (Bidan Community) if not managed appropriately
			Solid waste (manure) and leachate	Ephemeral creek line 80m north of abattoir	Direct discharge	Ecosystem health: Contaminated wastewater and leachate emissions can result in a potential or actual alteration to the environment.	Yes	Leachate produced from monthly cleaning of the lairage pens or from the washing of cattle may cause impacts to the creek and contaminate surrounding soils if not stored and disposed of appropriately. Manure contains high levels of nutrients and also possibly pathogens and weeds.
	<b>Fellmongering process</b>	Salting of skins to cure them ready for export off the premises	Odour	Residential Premises – Bidan Aboriginal Community 600m southwest of abattoir	Air / wind dispersion	Odour has the potential to impact amenity and wellbeing	Yes	Odour from fellmonger processes may impact on residents at Bidan community if skins are not treated or stored appropriately.

			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
			Solid waste (salt) and leachate	Ephemeral creek line 80m north of abattoir	Direct discharge	Ecosystem health: Contaminated wastewater and leachate emissions can result in a potential or actual alteration to the environment.	Yes	Fellmongering uses large volumes of salt (sodium) to preserve skins, which could become mobilised and impact the adjacent creek or surrounding soils if not stored appropriately.

## 7.2 Risk Criteria

During the assessment, the risk criteria in table 9 below will be applied to determine a risk rating set out in section 8.4.

**Table 9: Risk Criteria**

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the risk / opportunity occurring.		The following criteria has been used to determine the consequences of a risk occurring:		
			Public Health	Ecosystem/ Environmental
Almost Certain	The event is expected to occur in most circumstances	Severe	<ul style="list-style-type: none"> <li>Loss of life</li> <li>Exposure to hazard with permanent prolonged adverse health effects expected to large population</li> <li>Health criteria is significantly exceeded</li> </ul>	<ul style="list-style-type: none"> <li>Irreversible impact to significant high value or sensitive ecosystem expected</li> <li>Irreversible and significant impact on a wide scale</li> <li>Total loss of a threatened species expected</li> <li>Ecosystem criteria is significantly exceeded</li> </ul>
Likely	The event will probably occur in most circumstances	Major	<ul style="list-style-type: none"> <li>Exposure to hazard with permanent prolonged adverse health effects expected to small population</li> <li>Significant impact to amenity for extended periods expected to large population</li> <li>Health criteria is exceeded</li> </ul>	<ul style="list-style-type: none"> <li>Long-term impact to significant high value or sensitive ecosystem expected</li> <li>Long-term impact on a wide scale</li> <li>Adverse impact to a listed species expected</li> <li>Ecosystem criteria is exceeded</li> </ul>
Possible	The event could occur at some time	Moderate	<ul style="list-style-type: none"> <li>Exposure to hazard with short-term adverse health effects expected requiring treatment</li> <li>Impact to amenity expected for short periods to large population</li> <li>Health criteria is at risk of not being met</li> </ul>	<ul style="list-style-type: none"> <li>Minor and short-term impact to high value or sensitive ecosystem expected</li> <li>Off-site impacts at a local scale</li> <li>Ecosystem criteria is at risk of not being met</li> </ul>
Unlikely	The event is unlikely to occur	Minor	<ul style="list-style-type: none"> <li>Exposure to hazard with short-term adverse health effects expected</li> <li>Impact to amenity expected for short periods to small population</li> <li>Health criteria are likely to be met</li> </ul>	<ul style="list-style-type: none"> <li>Moderate to minor impact to ecosystem component (physical, chemical or biological)</li> <li>Minor off-site impacts at a local scale</li> <li>Ecosystem criteria are likely to be met</li> </ul>
Rare	The event may only occur in exceptional circumstances	Insignificant	<ul style="list-style-type: none"> <li>No detectable impacts to health</li> <li>No detectable impacts to amenity</li> <li>Health criteria met</li> </ul>	<ul style="list-style-type: none"> <li>None or insignificant impact to ecosystem component (physical, chemical or biological) expected with no effect on ecosystem function</li> <li>Ecosystem criteria met</li> </ul>

## 7.3 Risk Treatment

DER will treat risks in accordance with the Risk Treatment Matrix below:

**Table 10: Risk Treatment**

Risk Rating	Acceptability	Treatment
<b>Extreme</b>	Unacceptable.	Risks will not be tolerated. DER will refuse proposals.
<b>High</b>	Acceptable subject to primary and secondary controls.	Risks will be subject to multiple regulatory controls including primary and secondary controls. This will include both outcome-based and management conditions.
<b>Moderate</b>	Acceptable, generally subject to primary controls.	Risks will be subject to regulatory controls with a preference for outcome-based conditions where practical and appropriate.
<b>Low</b>	Acceptable, generally not requiring controls beyond the proponents controls.	Risks are acceptable and will generally not be subject to regulatory controls.

The emission types have been identified with the pathways and receptors in Table 12 below.

## 7.4 Risk of Odour Impact Analysis

### 7.4.1 General Hazard Characterisation and Impact

Odour emissions may be generated at the Colourstone Abattoir from:

- inadequate cleaning processes or storage of wastes that are by-products of the processing operations;
- the animal lairage pens as a result of cattle manure accumulation and storage, and during clean out of pens;
- the operation of the WWTS, from the storage of screened solid wastes, and during wastewater treatment and de-sludging processes; and
- inefficient treatment and storage of skins prior to or during fellmonger activities.

Odour can impact receptors causing annoyance potentially leading to stress and loss of amenity. Exposure to repeated odour events can create a nuisance effect.

### 7.4.2 Criteria for Assessment

There are no set threshold or concentration criteria for odour assessment. Under section 49(5) of the EP Act, it is an offence to emit or cause to be emitted an unreasonable emission from any premises. An unreasonable emission is defined in the EP Act (section 49(1)) as an emission or transmission of noise, odour or electromagnetic radiation which unreasonably interferes with the health, welfare, convenience, comfort or amenity of any person.

### 7.4.3 Assessment of Proponent Controls

The Applicant has committed to managing the abattoir to minimise the potential for odour emissions to be generated during operations. Proponent controls include:

- Conducting all processing of animals within the enclosed areas of the abattoir and all wastewaters being directed to the WWTS;

- The WWTS is a fully enclosed Dissolved Air Filtration unit designed to remove solids, nutrients, and grease which will result in significant reductions in BOD. The Applicant will ensure the WWTS is operated, maintained and serviced in accordance with manufacturer's specifications;
- Sludge will be regularly removed from the WWTS by a licensed waste contractor;
- Potable water will be used to hose down work areas, coupled with the use of disinfectants as required by relevant health and AQIS regulations. High-temperature water will be used to sterilize knives and slaughter / boning equipment. Wastewater generated on the abattoir floor from washdowns will be gravity fed via drains to a main collection sump prior to being pumped to the WWTS;
- Solid animal wastes (offal, bones, blood, etc.) will be collected and packaged prior to chilling / freezing and then exporting off the premises for sale;
- Paunch material (partially digested grass and manure from animal gut) from abattoir process areas will be washed down into the floor waste to be processed through the WWTS;
- Manure from the lairage pens will be cleaned out weekly, with a more thorough wash down using water performed monthly (wash water to be pumped and treated via the WWTS);
- Manure will be taken to Yeeda Station for composting prior to being used as soil conditioner on Kilito Station; and
- Hides will be stored in the main abattoir building until ready for fellmonger, when they will be transferred from the via forklift to the skins shed, to be thoroughly coated with salt, after which they are considered pickled and require no further refrigeration.

#### 7.4.4 Key Findings

**The Delegated Officer has reviewed the information regarding the odour impacts from the premises and has found:**

1. *Winds are likely to blow from the east and south east in the mornings and northwest in the afternoons at around 10-20km/hr, which are not expected to create a direct pathway on the closest residential receptor at Bidan Community.*
2. *Proponent controls are based on the appropriate storage and handling of waste materials and the correct operation of the WWTS.*
3. *Conditioning regulatory controls in the works approval will be considered subject to the risk assessment outcomes.*

#### 7.4.5 Consequence

Based on the general hazard characterization, expected wind patterns and the proximity to the nearest sensitive receptor, the Delegated Officer has determined that the impact of odour emissions from Colourstone Abattoir could conceivably impact amenity for short periods of time to a small population. Adjacent receptors include an Aboriginal Community comprised of around six residential premises located 600m southwest of the abattoir.

Therefore, the Delegated Officer considers the consequence to be minor.

#### 7.4.6 Likelihood of Consequence

The Delegated Officer has determined that the likelihood of odour emissions from the abattoir impacting the receptor could occur at some time. Therefore, the Delegated Officer considers the consequence to be **possible**.

### 7.4.7 Overall Rating

The Delegated Officer has compared the consequence and likelihood ratings described above through the Risk Matrix (Table 9) and determined that the overall rating for the risk of odour on sensitive receptors during operation is **moderate**.

## 7.5 Risk of Solid waste and leachate Impact Analysis

### 7.5.1 General Hazard Characterisation and Impact

Solid and liquid wastes produced during the operation of the abattoir (which includes the operation of the WWTS, lairage pens and skins shed) may be discharged to land and impact soils, surface water (adjacent creek), and groundwater should they not be appropriately stored and managed. This may result in actual alteration of the environment including disruption of ecological processes, impact on the aesthetic appeal of waters and eutrophication of waterways. Abattoir wastes are high in nutrients and organic matter and may also result in stormwater becoming contaminated and being discharged to surrounding soils and surface water.

The storage of manure at the lairage manure hardstand and leachate in the lairage sump could result in nutrients (nitrogen and phosphorus) and wastes high in organic matter becoming mobilised and discharging to the adjacent creek should these wastes not be regularly removed and disposed of appropriately. If not adequately maintained, the WWTS and associated storage infrastructure could overflow as a result of blockages or pipe rupture, or from the infrequent removal of sludge or solid wastes in storage containers.

The fellmonger process uses large volumes of salts to preserve skins, which could also become mobilised in storm water and impact the adjacent creek if skins, salts, and wastes are not managed and stored appropriately. Irrigation of treated wastewater from the abattoir WWTS will occur off-site at Yeeda Pastoral Station (regulated under separate DER approvals).

### 7.5.2 Criteria for Assessment

The *Australian Drinking Water Guidelines* (2011) and the freshwater aquatic ecosystem protection guidelines (ANZECC & ARMCANZ 2000).

### 7.5.3 Assessment of Proponent Controls

The Applicant will implement the following controls to reduce the risk of solid waste and leachate impacting the soils, surface water, and groundwater surrounding the abattoir, and particularly, the adjacent creek located 80m north of the abattoir:

**Table 11: Proposed controls to minimise infiltration to groundwater and discharge to surface water (construction works)**

Infrastructure	Description
Abattoir design (drainage) and process to ensure solid waste, wastewater and leachate is retained and stored, treated and disposed of appropriately	<ul style="list-style-type: none"><li>• External areas of the abattoir will drain to a Fox Environmental Systems Stormwater Treatment Unit which will divert any contaminated stormwater from around the abattoir to the premises WWTS;</li><li>• All wash water from within the abattoir floor will drain to the HyDAF HD-35 WWTS to be treated prior to discharge via irrigation on Yeeda Station;</li><li>• Solids removed from the WWTS screen and abattoir sump screens will be removed regularly and frozen with other waste to be sent away for rendering;</li><li>• All by-products of animal processing will be recovered, packaged and stored (chilled or frozen) ready for export off the premises.</li></ul>

Infrastructure	Description
WWTS	<ul style="list-style-type: none"> <li>• The HyDAF HD-35 WWTS is capable of treating 35kL per hour of wastewater. The abattoir is expected to generate around 200kL per day (average of 22kL per hour). An inlet screen will remove solids (&gt;1mm) from the wastewater stream prior to wastewater entering the WWTS;</li> <li>• Water will be treated (dissolved air flotation, ferric dosing, caustic dosing, sludge removal) and blended to an acceptable level for irrigation to adjacent fodder crops on Yeeda Station;</li> <li>• Sludge will be removed regularly by licensed contractor;</li> <li>• Treated wastewater discharged from the WWTS will be analysed monthly and discharge volumes measured via flowmeter at the discharge outlet. The average water quality treatment levels the WWTS is expected to achieve are: <ul style="list-style-type: none"> <li>○ BOD: 900mg/L</li> <li>○ Suspended Solids: 100 mg/L</li> <li>○ Nitrogen: 110mg/L</li> <li>○ Phosphorus: 10mg/L</li> </ul> </li> <li>• Treated wastewater will be blended with bore water at a ratio of approximately 1:2 prior to being pumped to a 1.2mm thick HDPE-lined storage pond located at the rear of the abattoir, for irrigation to fodder crops;</li> <li>• Treated wastewater from the irrigation storage pond will be sampled monthly;</li> <li>• The HDPE lined pond has the following dimensions and storage capacity: <ul style="list-style-type: none"> <li>• Top of pond – 13 x 13m;</li> <li>• Fill level – 12 x 12m (1m bund);</li> <li>• Base – 4 x 4m;</li> <li>• Total Depth – 4m</li> <li>• Total Volume – 3.7kL;</li> <li>• Maximum fill level – 2.5kL (pond has an installed high water level alarm); and</li> <li>• Freeboard to be maintained – 800mm;</li> </ul> </li> <li>• A groundwater monitoring bore (KMC1) is located at the rear of the abattoir, adjacent to the wastewater irrigation pond, which will be sampled quarterly for a full physicochemical suite.</li> </ul>
Lairage pens	<ul style="list-style-type: none"> <li>• Pens are roofed, lined with concrete and have a drain running down the centre of the pens draining to a leachate sump;</li> <li>• Adjacent to pens is a concrete bunded manure hardstand storage area; and</li> <li>• Lairage pens will be cleaned out weekly using a bobcat and stored at the bunded manure hardstand prior to being taken offsite to nearby pastoral stations for use as fertilizer. Pens will be hosed out with water monthly; wash water will drain to the leachate sump and will then be pumped to the WWTS for treatment.</li> </ul>
Fellmongering	<ul style="list-style-type: none"> <li>• Fellmongering is a dry process, with no generation of wash water during operations;</li> <li>• Salting is conducted in separate stand-alone shed, on a sealed concrete floor graded with a fall to the centre of the floor and blind sump;</li> <li>• Excess salt swept up at the end of every day.</li> </ul>

## 7.5.4 Key Findings

**The Delegated Officer has reviewed the information regarding the solid waste and leachate impacts from the premises and has found:**

1. *All wastes generated on the premises will be collected and stored in appropriate infrastructure.*
2. *All liquid wastewater streams will be directed to the WWTS.*



### 7.5.5 Consequence

Based upon Applicant management commitments, the Delegated Officer has determined that the impact of solid waste and leachate from Colourstone Abattoir could result in minor offsite impacts to ecosystems at a local scale. Therefore, the Delegated Officer considers the consequence to be **minor**.

### 7.5.6 Likelihood of Consequence

There is creek line that runs through the abattoir lot located approximately 80m to the north of the abattoir building. The creek is ephemeral in nature and generally only flows for short durations after significant rainfall events. The abattoir will not be operating during the wettest months of the year, further reducing the likelihood of any emissions to surface water.

The Delegated Officer has determined that having considered the infrastructure in place, the likelihood of solid waste and leachate from Colourstone Abattoir impacting the adjacent creek will be **unlikely** to occur.

### 7.5.7 Overall Rating

The Delegated Officer has compared the consequence and likelihood ratings described above through the Risk Matrix (Table 9) and determined that the overall rating for the risk of solid waste and leachate from Colourstone Abattoir on sensitive receptors during operation is **moderate**.

## 7.6 Summary of Risk Assessment and Acceptability

The risk items identified in section 8 including the application of risk criteria and the acceptability with treatment are summarised in Table 12 below.

**Table 12: Risk rating of emissions**

	Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating	Acceptability with treatment (conditions on instrument)
	Type	Source					
1.	Odour	<ul style="list-style-type: none"> <li>wastes from abattoir processing;</li> <li>lairage pens;</li> <li>WWTS;</li> <li>Wastewater irrigation storage pond; and</li> <li>fellmonger activities.</li> </ul>	Air/Wind	Infrastructure and management controls.	<p>Odour emissions have the potential to impact amenity and wellbeing.</p> <p>Individual responses to odour emissions may vary depending on an individual's age, health status, sensitivity, and odour exposure patterns. Perceived odour intensity may increase or decrease on exposure.</p> <p>Community response to an odour can include annoyance, potentially leading to stress, and loss of amenity. Exposure to repeated odour events can create a nuisance effect.</p>	<p>Minor consequence</p> <p>Possible</p> <p><b>Moderate risk</b></p>	Acceptable subject to proponent controls conditioned
2.	Solid wastes and leachate	<ul style="list-style-type: none"> <li>wastes from abattoir processing;</li> <li>lairage pens;</li> <li>WWTS;</li> <li>Wastewater irrigation storage pond; and</li> <li>fellmonger activities.</li> </ul>	Direct discharge	Infrastructure and management controls.	Wastes high in nutrients and organic matter becoming mobilised and discharging to surrounding soils, groundwater and / or the adjacent creek.	<p>Minor consequence</p> <p>Unlikely</p> <p><b>Moderate risk</b></p>	Acceptable subject to proponent controls conditioned

## 8. Determined Regulatory Controls

### 8.1 Summary of Controls

Table 13: Regulatory Controls

		Controls		
		8.2.1 and 8.2.2 Infrastructure and Equipment	8.2.1 and 8.2.2 Specified Action	8.3.1 Monitoring
Risk Items (see section 8)	1. Odour from abattoir processing operations, lairage pens, WWTS and fellmonger activities.	•	•	•
	2. Solid wastes and leachate from abattoir processing operations, lairage pens, WWTS and fellmonger activities.	•	•	•

### 8.2 Specified Infrastructure and Equipment Controls

#### 8.2.1 Odour Risk

The following environmental controls, infrastructure and equipment should be maintained and operated onsite for odour management:

- Manure must be removed from the lairage pens on at least a weekly basis and taken to the manure hardstand storage area prior to removal offsite within 48 hours;
- Lairage pens, manure hardstand area, and leachate sump must be completely cleaned of manure and leachate by no later than 31 December each year;
- Wastewater generated on the abattoir floor from wash downs must be gravity fed via drains to a main collection sump prior to being pumped to the premises WWTS;
- Operation, maintenance, and regular servicing of the WWTS to be conducted in accordance with the manufacturer's specifications; and
- Treated wastewater discharge from the WWTS and blended irrigation water to be sampled and analysed monthly.

#### 8.2.2 Solid Waste and Leachate Risk

The following environmental controls, infrastructure and equipment should be maintained and operated onsite for solid waste and leachate management:

- Abattoir design (drainage) and processes to ensure solid waste and leachate is retained and stored, treated, and disposed of appropriately;
- External areas of the abattoir to drain to a Stormwater Treatment Unit which will divert any contaminated stormwater from around the abattoir to the premises WWTS;

- All wash water from within the abattoir floor to drain to the HyDAF HD-35 WWTS;
- Treated wastewater discharge from WWTS to be analysed monthly and discharge volumes measured via flowmeter at the outlet;
- Irrigation water to be analysed monthly and discharge volumes measured via irrigation flow meter located at the wastewater irrigation storage pond;
- Limits to be set for wastewater treatment levels based on expected maximum (worst case scenario) treatment levels:
  - BOD: 1,300mg/L
  - Suspended Solids: 200 mg/L
  - Nitrogen: 140mg/L
  - Phosphorus: 15mg/L
- Treated wastewater to be blended with bore water at a ratio of approximately 1:2 prior to being pumped to a HDPE-lined storage pond located at the rear of the Abattoir. Treated and blended wastewater will then be pumped to Yeeda Station for irrigation to fodder crops;
- Lairage pens to be roofed with concrete floors and central drain, with adjacent concrete bunded manure hardstand storage area and leachate sump to contain drainage and wash water from lairage pens;
- Manure must be removed from the lairage pens on at least a weekly basis and taken to the manure hardstand storage area prior to removal offsite within 48 hours;
- Lairage pens, manure hardstand area, and leachate sump must be completely cleaned of manure and leachate by no later than 31 December each year;
- Fellmongering to be conducted in separate stand-alone shed, with sealed concrete floor graded with a fall to the centre of the floor and blind sump;
- Excess salt from fellmonger activities to be swept up at the end of every day.

## 8.3 Other Monitoring Requirements

### 8.3.1 Monitoring Requirements

There will be general monitoring conditions on the operating licence requiring sampling and analysis of the quality of treated effluent generated by the WWTS, as well as ambient groundwater quality monitoring from the KMB1 bore. The proponent will also need to record volumes of effluent treated and discharged from the premises. Licence conditions will be included to ensure sampling is undertaken in accordance with AS/NZS standards, and analysis is performed by NATA accredited laboratory. Conditions will also be included to ensure adequate time between sampling events.

Inflow and outflow meters have been installed on the WWTS, and an outflow meter has been installed on the pump at the wastewater irrigation storage pond. The Applicant is required to monitor the volumes of treated wastewater discharged (outflow) from the WWTS and the volume of blended wastewater pumped to the Yeeda Station irrigation area.

### 8.3.2 Monitoring Reports

Results of the analysis of treated wastewater as well as the monitoring of inputs and outputs will be required to be reported to DER annually.

## 9. Setting Conditions

The conditions in the Issued Licence have been determined in accordance with DER's *Guidance Statement on Setting Conditions*.

DER's *Guidance Statement on Licence Duration* has been applied, and the Issued Licence expires in 20 years from the date of issue.

Condition Ref	Grounds
Environmental Compliance Condition 1	Environmental compliance is a valid, risk-based condition to ensure appropriate linkage between the licence and the EP Act.
Notification of Material Change 2, 3 and 4	These conditions are valid, risk-based and enable flexibility in operations.
Infrastructure and Equipment 5 and 6	These conditions are valid, risk-based and contain appropriate controls (see section 9.2 of this decision report).
Specified Action 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16	These conditions are valid, risk-based and consistent with the EP Act.
Treated Wastewater Monitoring and Reporting 17, 18 and 19	These conditions are valid, risk-based and consistent with the EP Act.
Monitoring and Reporting of Inputs and Outputs 20 and 21	These conditions are valid, risk-based and consistent with the EP Act.
Emissions 22	This condition is valid, risk-based and consistent with the EP Act.
Information 23, 24, 25, 26 and 27	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.

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

## 10. Applicant's Comments on Risk Assessment

The Applicant was provided with the draft decision report and draft licence on 21 September 2016. The Applicant provided comments on drafts to DER on 28 October 2016. Applicant comments included advice relating to minor changes to the processing of blood, offal and wastewater. These changes do not affect the risk assessment and as such have been noted and accepted by the Delegated Officer. The Applicant is also considering changes to the disposal locations for paunch material and other wastes produced on the premises and will provide further information to DER to ascertain whether any additional approvals or amendments are required to the operating licence.

## 11. Conclusion

This assessment of the risks of activities on the premises has been undertaken with due consideration of a number of factors, including the documents and policies specified in this decision report (summarised in Appendix 2). This assessment was also informed by a site inspection by a DER officer on 6 July 2016.

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

**Jonathan Bailes**

**Manager Licensing (Process Industries)**

*An officer delegated under section 20 of the Environmental Protection Act 1986*

## Appendix 1: Key Documents

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	Document Title	In text ref	Availability
1	Works approval W5711/2014/1 – Colourstone Abattoir		accessed at <a href="http://www.der.wa.gov.au">http://www.der.wa.gov.au</a>
2	Works Approval 5710/2014/1 – Yeeda Station Irrigation Proposal		accessed at <a href="http://www.der.wa.gov.au">http://www.der.wa.gov.au</a>
3	DER <i>Guidance Statement on Regulatory principles</i> , July 2015	DER 2015a	accessed at <a href="http://www.der.wa.gov.au">http://www.der.wa.gov.au</a>
4	DER <i>Guidance Statement on Setting conditions</i> , September 2015	DER 2015b	
5	DER <i>Guidance Statement on Licence duration</i> , November 2014	DER 2014	
6	DER <i>Guidance Statement on Licensing and works approvals processes</i> , September 2015	DER 2015c	