



Licence

Environmental Protection Act 1986, Part V

Licensee: Department of Corrective Services

Licence: L8521/2011/1

Registered office: Level 9, 141 St Georges Terrace
PERTH WA 6000

ABN: 25 103 389 163

Premises address: Karnet Prison Farm
Part of State Forest 22
KEYSBROOK WA 6126
(as depicted in Schedule 1)

Issue date: Thursday, 26 May 2011

Commencement date: Monday, 30 May 2011

Expiry date: Tuesday, 29 May 2035

Prescribed premises category

Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved Premises production or design capacity
15	Abattoir: premises on which animals are slaughtered.	1 000 tonnes or more per year	2 000 tonnes per annual period
54	Sewage facility: premises – (a) on which sewage is treated (excluding septic tanks); or (b) from which treated sewage is discharged onto land or into waters.	100 m ³ or more per day	103 m ³ per day

Conditions

This Licence is subject to the conditions set out in the attached pages.

Date signed: 14 July 2016

.....
Caron Goodbourn

A/Manager Licensing – Industry Regulation (Waste Industries)

Officer delegated under section 20

of the *Environmental Protection Act 1986*



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Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role

The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements

This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:

<http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html>

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.
- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.
- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.



You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees

If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non-payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

Ministerial conditions

If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary

The Karnet Prison Farm is a State Government minimum-security prison and its operation and maintenance is the responsibility of the Department of Corrective Services (DCS). The premises is located within State Forest 22 in the Shire of Serpentine-Jarrahdale. The surrounding area is forest with a cleared area for the Karnet Prison Farm. A sewage treatment facility, treating approximately 99m³/day (with a maximum capacity to treat 103m³/day), and an abattoir, with an expected throughput of 1800 tonnes per year, are located on the premises.

Up to a maximum of 400 prisoners reside within the premises boundary. The Myara Crusher Facilities Site of the Huntley Mine Site (L6210/1991/10) is located approximately 4.2km SE of the premises with mining activities located as close as 100m east and south and 1km west of the premises boundary. A rural residence is located approximately 2.3km NW of premises boundary. The closest residential area (special rural) is 3.4km SW of the premises boundary.

The sewage wastewater treatment plant (WWTP) receives sewage (grey and black water) from the Karnet Prison Farm and treats it through an extended aeration system that includes ultra-filtration (UF) membranes for the physical separation of suspended solids, some bacteria and viruses and contains a triple barrier disinfection system via a UV disinfection, chlorine dosing and residual monitoring to achieve Class A quality water for irrigation reuse. The treated wastewater is either pumped directly from a 100kL per day storage tank or storage pond to the irrigation area. The pond can be supplemented with groundwater to meet irrigation needs. The treated wastewater is used for irrigation of prison farming lands, orchards or the prison recreation oval. The treatment plant has a maximum capacity to treat approximately 103 m³ per day; however, has a nominated throughput of up to 99 m³ per day with control system limiters.

The abattoir processes cattle, sheep and pork. Solid wastes are taken offsite and all process and wastewaters are directed to the abattoir wastewater treatment system that consists of four ponds and a tank. Chlorine is added to the wastewater in the tank and cycles for approximately 2 – 3 hours until the chlorine levels reach approximately 1.65mg/L. The treated wastewater is then irrigated with approximately 8 cycles being completed in 24 hours, which equates to approximately 103 kL per day.

Additionally, sludge removed from the abattoir's primary settlement pond approximately every 5 years, will be collected and transported to a pit located on the Premises. Here it will be mixed with soil, turned periodically and after approximately 6 months or once stabilised it will be spread on paddocks within the premises for soil amelioration purposes.

The most significant emissions and discharges from the activities onsite are odour and discharges to land in the form of irrigation of treated wastewater.

The licensee has applied for a licence amendment for the following:



- (i) to have abattoir operations (including associated discharges via irrigation and all other waste management) included and approved on the DER Licence; and
- (ii) To reflect revised irrigation areas (larger than previous) for both the WWTP and Abattoir irrigation; and
- (iii) To increase the nutrient concentration limit for nitrogen in treated wastewater being irrigated.

As part of the amendment, conditions have been added and/or modified to regulate the above changes, and the licence has been updated to the latest format which has resulted in some other inherent changes to conditions. All changes to licence conditions as a result of this amendment have been highlighted and explained in the Decision Document accompanying this amended licence.

The licences and works approvals issued for the Premises since 9/08/2012 are:

Instrument log		
Instrument	Issued	Description
L8521/2011/1	9/08/2012	Licence amendment
L8521/2011/1	14/07/2016	Licence amendment to include abattoir operations and additional irrigation areas.

Severance

It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

'abattoir wastewater treatment system' means the system on the Premises for the treatment of wastewater from abattoir operations, which directs wastewater from the abattoirs internal drains to a series of 3 clay-lined treatment ponds, then to an imperviously-lined oxidation pond and finally to the chlorine-dosing tank from which treated wastewater is irrigated in accordance with section 3.2 of the Licence;

'Act' means the *Environmental Protection Act 1986*;

'annual period' means the inclusive period from 1 April until 31 March in the following year;

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples*;

'AS/NZS 5667.10' means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters*;



'AS/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters*;

'averaging period' means the time over which a limit is measured or a monitoring result is obtained;

'BOD' means 5 day unfiltered Biochemical Oxygen Demand;

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purpose of correspondence means;
Chief Executive Officer
Department Administering the *Environmental Protection Act 1986*
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au;

'cfu/100ml' means colony forming units per 100 millilitres;

'hardstand' means a surface with a permeability of 10^{-9} metres/second or less;

'leachate' means liquid released by or water that has percolated through waste and which contains some of its constituents;

'Licence' means this Licence numbered L8521/2011/1 and issued under the Act;

'Licensee' means the person or organisation named as Licensee on page 1 of the Licence;

'mAHD' means metres, Australian Height Datum;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'quarterly' means the 4 inclusive periods from 1 April to 30 June, 1 July to 30 September, 1 October to 31 December and in the following year, 1 January to 31 March;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'sewage wastewater treatment plant' means the infrastructure on the Premises for the treatment of sewage and grey water from the prison, which includes an extended aeration system incorporating ultra-filtration membranes for the physical separation of suspended solids, bacteria and viruses, ultraviolet disinfection and chlorine dosing, prior to storage within a final holding tank from which treated wastewater is irrigated in accordance with section 3.2 of the Licence;

'six monthly' means the 2 inclusive periods from 1 April to 30 September and 1 October to 31 March in the following year;

'solid waste' means waste that:

- (a) has an angle of repose of greater than 5 degrees; and
- (b) does not contain, or is not comprised of, any free liquids; and



- (c) does not contain, or is not comprised of, any liquids that are capable of being released when the waste is transported;
- (d) does not become free flowing at or below 60 degrees Celsius or when it is transported; and
- (e) is generally capable of being moved by a spade at normal temperatures (i.e. is spadeable);

'spot sample' means a discrete sample representative at the time and place at which the sample is taken; and

'treated wastewater' means wastewater which has been successfully treated either through the abattoir wastewater treatment system or the sewage wastewater treatment plant and is ready for irrigation in accordance with section 3.2 of the Licence;

'WA Biosolids Guidelines' means the "Western Australian guidelines biosolids management", published by the Department of Environment and Conservation in December 2012 and amended from time to time;

'µS/cm' means microsiemens per centimetre.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.2 Premises operation

1.2.1 The Licensee shall ensure that all abattoir process wastewaters and contaminated or potentially contaminated waters associated with the abattoir activities are directed to the abattoir wastewater treatment system.

1.2.2 The Licensee shall ensure that all sewage is directed to the sewage wastewater treatment plant, except in the event of a failure where the Licensee shall ensure that all sewage is directed to the primary pond of the abattoir wastewater treatment system.

1.2.3 The Licensee shall ensure that the storage and/or treatment of sludge from the abattoir wastewater treatment system is undertaken on a hardstand area which is designed such that leachate from within the area will not escape, and uncontaminated stormwater runoff from outside will not enter the area.

1.2.4 The Licensee shall ensure that sludge removed from the sewage wastewater treatment plant is disposed to an appropriately licensed facility and is not stored at the Premises pending its disposal.

2 Emissions

2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit specified in any part of section 2 of this Licence.

2.2 Emissions to land

2.2.1 The Licensee is only permitted to emit wastes to land as described in Table 2.2.1.

Table 2.2.1: Emissions to land

Emission point (and map reference if applicable)	Description	Source	Specification
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Irrigation Field No. 1 (as shown on Map of emission points in Schedule 1)	Irrigation of treated wastewater	Abattoir wastewater treatment system	a) Irrigation does not result in surface ponding and runoff; b) Irrigation does not occur when it is raining.
Irrigation Field No. 2, 3, 4 and 5 (as shown on Map of emission points in Schedule 1)		Sewage wastewater treatment plant	
Spreading of solid waste (sludge) from the abattoir wastewater treatment system, which has been stabilised in accordance with condition 1.2.3.			c) In accordance with the WA Biosolids Guidelines

2.2.2 Subject to condition 2.2.1, the Licensee shall not cause or allow emissions to land greater than the limits listed in Table 2.2.2.

Table 2.2.2: Emission limits to land			
Emission point (and map reference if applicable)	Parameter	Limit	Averaging period
Irrigation Field No. 1, 2, 3 and 4 (as shown on Map of emission points in Schedule 1)	Total Nitrogen	180 kg/ha	Annual
	Total Phosphorus	20 kg/ha	
Irrigation Field No. 3 & 5 (as shown on Map of emission points in Schedule 1)	Total Nitrogen	300 kg/ha	
	Total Phosphorus	50 kg/ha	

3 Monitoring

3.1 General monitoring

3.1.1 The licensee shall ensure that:

- all water samples are collected and preserved in accordance with AS/NZS 5667.1;
- all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
- all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
- all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

3.1.2 The Licensee shall ensure that:

- quarterly monitoring is undertaken at least 45 days apart; and
- six monthly monitoring is undertaken at least 4 months apart.

3.2 Monitoring of emissions to land

3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table.

Table 3.2.1: Monitoring of emissions to land				
Description (and map reference if applicable)	Parameter	Units	Averaging period	Frequency
Quality of treated wastewater from sewage wastewater treatment plant ('SL01', as shown on the Map of monitoring locations in Schedule 1)	pH ¹	pH units	Spot sample	Quarterly
	Electrical conductivity	µS/cm		
	Total Dissolved Solids (TDS)	mg/L		
	BOD	mg/L		
	Total nitrogen	mg/L		
	Nitrate-nitrogen	mg/L		
	Total phosphorus	mg/L		
	Total suspended solids	mg/L		



Treated wastewater from the abattoir wastewater treatment system (SL02 as shown on the Map of monitoring locations in Schedule 1)	<i>E. coli</i>	cfu/100 mL	Spot sample	Quarterly
	pH ¹	pH units		
	Electrical conductivity	µS/cm		
	Total Dissolved Solids (TDS)	mg/L		
	BOD	mg/L		
	Total nitrogen	mg/L		
	Nitrate-nitrogen	mg/L		
	Total phosphorus	mg/L		
	Total suspended solids	mg/L		
	<i>E. coli</i>	cfu/100 mL		
Volume and loading rates of treated wastewater to each ² of the irrigation fields (Irrigation Field No. 1, 2, 3, 4 and 5, as shown on Map of emission points in Schedule 1).	Volumetric flow rate	m ³ /day	Monthly	Continuous
	Total volume	m ³	Annual total	
	Total nitrogen	kg/ha	Annual total	
	Total phosphorus	kg/ha	Annual total	

Note 1 – In-field non-NATA analyses permitted

Note 2 – Parameters to be measured separately for each of the irrigation areas

3.3 Monitoring of inputs

3.3.1 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

Table 3.3.1: Monitoring of inputs

Input	Parameter	Units	Averaging period	Frequency
Animals to be slaughtered	Live weight of animals	Tonnes (estimated)	Annual	Estimated from number of livestock received at the abattoir

3.4 Ambient environmental quality monitoring

3.4.1 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.

Table 3.4.1: Monitoring of ambient groundwater quality

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
MW01, MW02, MW03, MW04, MW05	Standing water level	m(AHD)	Spot sample	Six monthly
	pH ¹	pH units		
	Electrical conductivity ¹	µS/cm		
	Total Dissolved Solids (TDS)	mg/L		
	Total nitrogen			
	Nitrate-Nitrogen			
Total Phosphorus				

Note 1 – In-field non-NATA analyses permitted

4 Improvements

4.1.1 The Licensee shall complete the improvements in Table 4.1.1 by the date of completion in Table 4.1.1.



Table 4.1.1: Improvement program		
Improvement reference	Improvement	Date of completion
IR1	<p>The Licensee shall prepare and submit to the CEO a Waste Application Management Plan for the application of wastes from the abattoir wastewater treatment plant and the sewage wastewater treatment plant to land. The plan shall include but not be limited to:</p> <ul style="list-style-type: none">(a) Relevant environmental characteristics at the Premises (including elevation and contours, rainfall and evaporation data, sensitive receptors including groundwater and surface water and their eutrophication risk);(b) Details of infrastructure including the waste application area/s and the method (e.g. sprinkler type, layout, operating pressure and coverage uniform);(c) Current information on soil types, soil strata, infiltration rates and soil nutrient status for the waste application area/s;(d) Characterisation of all waste/s being applied to the waste application area/s (including physical characteristics and contaminant analysis);(e) Waste application rate/s, duration and frequency;(f) Loading rate/s for nitrogen, phosphorus, total dissolved solids, and any other relevant parameters for the waste or waste application area;(g) Justification for the suitability of the loading rates above (with respect to soil characteristics, local meteorological conditions, vegetation established and/or harvested);(h) Any relevant waste application management measures and contingency planning; and(i) Monitoring and reporting.	31 December 2016
IR2	<p>The Licensee shall submit a report to the CEO which confirms the construction specifications and permeability of all wastewater containment ponds and dams within the prescribed premises boundary.</p>	31 December 2016

5 Information

5.1 Records

5.1.1 All information and records required by the Licence shall:

- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 5.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
- (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
 - (i) off-site environmental effects; or
 - (ii) matters which affect the condition of the land or waters.

5.1.2 The Licensee shall complete an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.



5.1.3 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

5.2 Reporting

5.2.1 The Licensee shall submit to the CEO an Annual Environmental Report by 30 April in each year for the annual period. The report shall contain the information listed in Table 5.2.1 in the format or form specified in that table.

Table 5.2.1: Annual Environmental Report		
Condition or table (if relevant)	Parameter	Format or form ¹
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
2.1.1	Summary of limit exceedances for the annual period	None specified
Table 3.2.1	Monitoring of emissions to land for the annual period	None specified
Table 3.3.1	Monitoring of inputs for the annual period	None specified
Table 3.4.1	Monitoring of ambient groundwater quality for the annual period	None specified
5.1.2	Compliance for the annual period	Annual Audit Compliance Report (AACR)
5.1.3	Complaints summary for the annual period	None specified

Note 1: Forms are in Schedule 2

5.2.2 The Licensee shall ensure that the Annual Environmental Report also contains an assessment of the information contained within the report against previous monitoring results and Licence limits.

5.3 Notification

5.3.1 The Licensee shall ensure that the parameters listed in Table 5.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 5.3.1: Notification requirements			
Condition or table (if relevant)	Parameter	Notification requirement ¹	Format or form ²
2.1.1	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act

Note 2: Forms are in Schedule 2



Schedule 1: Maps

Premises map

The Premises is shown in the map below. The GPS coordinates depict the Premises boundary.

Location	Latitude	Longitude
A	116.054	-32.437
B	116.058	-32.440
C	116.071	-32.438
D	116.070	-32.437
E	116.074	-32.436
F	116.080	-32.437
G	116.084	-32.450
H	116.070	-32.446
I	116.068	-32.450
J	116.052	-32.449
K	116.050	-32.446





Map of emission points

The locations of the emission points defined in Tables 2.2.1 are shown below.





Map of monitoring locations

The location of monitoring points as defined in Tables 3.2.1 and 3.4.1.





Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

ANNUAL AUDIT COMPLIANCE REPORT PROFORMA

SECTION A

LICENCE DETAILS

Licence Number:	Licence File Number:
Company Name:	ABN:
Trading as:	
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of the Licence complied with within the reporting period? (please tick the appropriate box)

Yes Please proceed to Section C
 No Please proceed to Section B

Each page must be initialled by the person(s) who signs Section C of this Annual Audit Compliance Report (AACR).

Initial:



SECTION C

SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report (AACR) may only be signed by a person(s) with legal authority to sign it. The ways in which the AACR must be signed and certified, and the people who may sign the statement, are set out below.

Please tick the box next to the category that describes how this AACR is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your premises.

If the licence holder is		The Annual Audit Compliance Report must be signed and certified:
An individual	<input type="checkbox"/> by the individual licence holder, or <input type="checkbox"/> by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the licensee's behalf.	
A firm or other unincorporated company	<input type="checkbox"/> by the principal executive officer of the licensee; or <input type="checkbox"/> by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.	
A corporation	<input type="checkbox"/> by affixing the common seal of the licensee in accordance with the <i>Corporations Act 2001</i> ; or <input type="checkbox"/> by two directors of the licensee; or <input type="checkbox"/> by a director and a company secretary of the licensee, or <input type="checkbox"/> if the licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or <input type="checkbox"/> by the principal executive officer of the licensee; or <input type="checkbox"/> by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.	
A public authority (other than a local government)	<input type="checkbox"/> by the principal executive officer of the licensee; or <input type="checkbox"/> by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.	
a local government	<input type="checkbox"/> by the chief executive officer of the licensee; or <input type="checkbox"/> by affixing the seal of the local government.	

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of \$50,000 for an individual or body corporate.

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____

SIGNATURE: _____

NAME:
(printed) _____

NAME:
(printed) _____

POSITION: _____

POSITION: _____

DATE: ____/____/____

DATE: ____/____/____

SEAL (if signing under seal)



Licence: L8521/2011/1
 Form: N1

Licensee: Department of Corrective Services
 Date of breach:

Notification of detection of the breach of a limit.

These pages outline the information that the operator must provide.
 Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	



Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of Department of Corrective Services	
Date	



Decision Document

Environmental Protection Act 1986, Part V

Proponent: Department of Corrective Services

Licence: L8521/2011/1

Registered office: Level 9, 141 St Georges Terrace
PERTH WA 6000

ABN: 25 103 389 163

Premises address: Karnet Prison Farm
Part of State Forest 22
KEYSBROOK WA 6126
(as depicted in Schedule 1 of the Licence)

Issue date: Thursday, 26 May 2011

Commencement date: Monday, 30 May 2011

Expiry date: Tuesday, 29 May 2035

Decision

Based on the assessment detailed in this document, a decision has been made to issue an amended licence. In reaching this decision, it is considered that all relevant factors have been taken into account and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by:

Elizabeth Whisson
Licensing Officer

Cassie Bell
Licensing Officer

Decision Document authorised by:

Caron Goodbourn
Delegated Officer



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1 Purpose of this Document

This decision document explains how the application has been assessed and determined and provides a record of the decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to the assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent’s responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

Administrative details		
Application type	Works Approval <input type="checkbox"/> New Licence <input type="checkbox"/> Licence amendment <input checked="" type="checkbox"/> Works Approval amendment <input type="checkbox"/>	
Activities that cause the premises to become prescribed premises	Category number(s)	Assessed design capacity
	15 – Abattoir	2000 tonnes per annual period
	54 – Sewage facility	103m ³ per day
Application verified	Date: 1/6/2016	
Application fee paid	Date: N/A	
Works Approval has been complied with	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
Compliance Certificate received	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
Commercial-in-confidence claim	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>



Is the proposal subject to Ministerial Conditions?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i>)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Department of Water consulted Yes <input type="checkbox"/> No <input type="checkbox"/>
Is the Premises within an Environmental Protection Policy (EPP) Area Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Is the Premises subject to any EPP requirements? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

3 Executive summary of proposal and assessment

The Karnet Prison Farm is a State Government minimum-security prison and its operation and maintenance is the responsibility of the Department of Corrective Services (DCS). The premises is located within State Forest 22 in the Shire of Serpentine-Jarrahdale. The surrounding area is forest with a cleared area for the Karnet Prison Farm. A sewage treatment facility, treating approximately 99m³/day (with a maximum capacity to treat 103m³/day), and an abattoir, with an expected throughput of 1800 tonnes per year, are located on the premises.

Up to a maximum of 400 prisoners reside within the premises boundary. The Myara Crusher Facilities Site of the Huntley Mine Site (L6210/1991/10) is located approximately 4.2km SE of the premises with mining activities located as close as 100m east and south and 1km west of the premises boundary. A rural residence is located approximately 2.3km NW of premises boundary. The closest residential area (special rural) is 3.4km SW of the premises boundary.

Dirk Brook, a significant stream, runs across the SW corner of the premises and eventually flows into the Serpentine River approximately 27km downstream. The Serpentine Pipehead Dam Catchment Area, a P1 Public Drinking Water Source Area is located immediately E and N of the premises and includes a small section of the NE corner of the premises. The Serpentine Dam is located approximately 3.5km E of the premises. Wetlands occur within and extend out of the premises. The wetland areas within the premises are categorised as Resource Enhancement (most likely due to historical clearing that has occurred) whereas those sections of wetland beyond the premises are designated Conservation Category Wetlands. Groundwater monitoring from 2014/2015 indicates that the groundwater level on the Premises ranges from as shallow as 0.5m below the top of bore casing to 5m below top of bore casing.

The premises has a relatively high annual rainfall amount of almost 1200mm/year with approximately 75-90% of the annual total received during the months of April to November. Soil types in the area are generically characterised by ironstone gravels with sandy and earthy matrices. Soil investigations were performed by consultants on behalf of DCS at two different irrigation areas. One presented with deep yellow sands and the other with a very dark brown sandy loam and >50% gravel in the top 100mm. However, these investigations were limited to one test pit each and are not necessarily indicative of wider soil types.

The wastewater treatment plant (WWTP) receives sewage (grey and black water) from the Karnet Prison Farm and treats it through an extended aeration system that includes ultra-filtration (UF) membranes for the physical separation of suspended solids, some bacteria and viruses and contains



a triple barrier disinfection system via a UV disinfection, chlorine dosing and residual monitoring to achieve Class A quality water for irrigation reuse. The treated wastewater is either pumped directly from a 100kL per day storage tank or storage pond to the irrigation area. The pond can be supplemented with groundwater to meet irrigation needs. The treated wastewater is used for irrigation of prison farming lands, orchards or the prison recreation oval. The WWTP has a maximum capacity to treat approximately 103 m³ per day; however, has a nominated throughput of up to 99 m³ per day with control system limiters.

The abattoir processes cattle, sheep and pigs. Solid wastes are taken offsite and all process and wastewaters are directed to the abattoir wastewater treatment system that consists of four ponds and a tank. Chlorine is added to the wastewater in the tank and cycles for approximately 2 – 3 hours until the chlorine levels reach approximately 1.65mg/L. The treated wastewater is then irrigated with approximately 8 cycles being completed in 24 hours, which equates to approximately 103 kL per day.

Additionally, sludge removed from the abattoir's primary settlement pond approximately every 5 years, will be collected and transported to a pit located on the premises. It will be mixed with soil for liquid management and after approximately 6 months or once stabilised, it will be spread on paddocks within the premises for soil amelioration purposes.

The most significant emissions and discharges from the activities onsite are odour and discharges to land in the form of irrigation of treated wastewater.

The licensee has applied for a licence amendment for the following:

- (i) to have abattoir operations (including associated discharges via irrigation and all other waste management) included and approved on the DER Licence; and
- (ii) To reflect revised irrigation areas (larger than previous) for both the WWTP and Abattoir irrigation; and
- (iii) To increase the nutrient concentration limit for nitrogen in treated wastewater being irrigated.

As part of the amendment, conditions have been added and/or modified to regulate the above changes, and the licence has been updated to the latest format which has resulted in some other inherent changes to conditions.

All material changes to licence conditions as a result of this amendment have been highlighted and explained in the Decision Table below. A condition transfer map is also included in Appendix B for quick reference to how previous conditions have been transferred into the amended licence, or otherwise.



4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER’s Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Interpretation	L1.1.1 – 1.1.3	<p>Conditions 1.1.1 – 1.1.3 have been included on the licence as part of the amendment to provide clarification on what is meant by the terms in the licence.</p> <p>It is noted that Condition 1.1.2 includes a number of new definitions for terms which were not included in the definitions of the previous version of the licence due to not being used in the previous version of the licence.</p> <p>The majority of the new terms and their definitions are provided for clarity and are consistent with other instruments recently granted by DER (e.g. “hardstand”, “leachate”, “Licensee”, etc.). There are also three new terms which have been used in the amended licence conditions and are specific to the Premises (i.e. “abattoir wastewater treatment plant”, “sewage wastewater treatment plant” and “treated wastewater”).</p> <p>Similarly some definitions from the previous version of the licence have been updated (e.g. “CEO”, “Premises”) or removed as they are either no longer used in the amended licence (e.g. “dangerous goods”), or have a commonly understood meaning which is not required to be defined (e.g. “mg/L”).</p>	
Premises Operation	L1.2.1 and L1.2.2	<p>Conditions 1.2.1 and 1.2.2 have been included on the licence to ensure the Licensee directs all abattoir and sewage wastewater to the appropriate wastewater treatment system/s to ensure they are adequately treated prior to irrigation, in accordance with their amendment application. The premises is also subject to the general provisions of the <i>EP Act</i> in terms of ensuring that pollution and</p>	General provisions of the <i>Environmental Protection Act 1986</i>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>environmental harm does not occur.</p> <p>Refer to the Emissions to land section for more detail on the environmental risk assessment supporting these conditions.</p>	
	L1.2.3 - L1.2.4	<p>Condition 1.2.3 has been added to the licence as part of the amendment to ensure solid waste from the abattoir (pond sludge) is only stored and treated on a hardstand area.</p> <p>Condition 1.2.4 (condition 9 from the previous version of the licence) has been included to continue to ensure sludge from the sewage WWTP continues to be disposed of offsite.</p> <p>The premises is also subject to the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> and general provisions of the <i>EP Act</i>.</p> <p>Refer to the Fugitive emissions, and Odour sections for more detail on the environmental risk assessment supporting these conditions.</p>	<p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i></p> <p>General provisions of the <i>Environmental Protection Act 1986</i></p>
Emissions general	L2.1.1	<p>Descriptive and quantitative limits are set through conditions 2.2.1 and 2.2.2 of the licence and therefore condition regarding recording and investigation of exceedances of limits has been included.</p> <p>Refer to the Emissions to land section for more detail on the environmental risk assessment supporting these conditions.</p>	
Emissions to land including monitoring	L1.2.1 – L1.2.2; L2.1.1; L2.2.1 - L2.2.2; L3.2.1; L3.4.1; L4.1.1 – L4.1.2 L5.2.1 – L5.2.2;	<p>For DERs assessment of emissions to land including monitoring see Appendix A. The emissions to land assessment in Appendix A relates to the irrigation of treated wastewater (sewage and abattoir waste) on the Premises.</p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
	L5.3.1		
Fugitive emissions	L1.2.3 - L1.2.4; L2.2.1; L3.4.1; L4.1.1 – L4.1.2 L5.2.1 – L5.2.2;	For DERs assessment of fugitive emissions see Appendix A. Fugitive emissions assessed in Appendix A are divided into the following key emissions: (1) Unintended spills or leakages from chemical and/or hydrocarbons storage on the Premises; (2) Stormwater contamination from the lairage yards, abattoir operations generally, (3) Stormwater contamination from sludge storage and sludge management; (4) Unintended seepage or overtopping of wastewater treatment ponds associated with the sewage wastewater treatment plant or abattoir wastewater treatment plant; and (5) Potential dust emissions from animal and vehicle movements.	
Odour	L1.2.4 (Premises operation section)	Operation <u>Emission Description</u> <i>Emission:</i> Potential for odour from the abattoir, lairage yards, wastewater treatment systems (abattoir and sewage), irrigation, sludge removal from the abattoir WWTP, mixing and stabilisation of abattoir sludge and application of stabilised abattoir sludge to the Premises. <i>Impact:</i> Discharge of odour to the atmosphere outside the premises boundary causing amenity impacts to sensitive receptors. Prisoners also reside on the premises. The closest external sensitive premises, a rural residence, is located 2.3km NW of the premises boundary. A residential area, zoned special rural, is also located 3.4km SW of the premises boundary. There have been no odour complaints received by DER in the last 4 years. <i>Controls:</i> The abattoir operations are conducted within enclosed buildings. Solid wastes from the abattoir are taken offsite on a daily basis. Accumulated sludge in the sewage WWTP digester tanks will periodically be pumped out by a licensed contractor when a pump out level is triggered. The sludge will then be taken offsite	General provisions of the <i>Environmental Protection Act 1986</i>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>to a licensed facility for disposal. If odour becomes an issue during the mixing and stabilisation of the abattoir sludge, soil, clay or quick lime may be added or a physical cover (tarp) may be used to cover the pile.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Unlikely <i>Risk Rating:</i> Moderate</p> <p><u>Regulatory Controls</u> Condition 1.2.4 (condition 9 from the previous version of the licence) continues to prohibit sewage sludge from being stored on the premises.</p> <p>Condition 5.1.3 requires the maintenance of a record of any complaints received and actions taken. A summary of any complaints recorded is required to be provided with the annual environmental report under condition 5.2.1.</p> <p>Given the distance to sensitive receptors and lack of complaints, no other specified conditions relating to odour have been included on the licence as part of this amendment. The general provisions of the <i>Environmental Protection Act 1986</i> are considered sufficient to regulate the risk.</p> <p><u>Residual Risk</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Unlikely <i>Risk Rating:</i> Moderate</p>	
Noise	N/A	Licence L8521/2011/1 did not contain any specific noise conditions and DER has not received any complaints regarding noise associated with the premises. There have been no changes likely to have significantly increased noise levels from the	<i>Environmental Protection (Noise) Regulations 1997</i>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		premises; therefore, noise has not been re-assessed as part of this licence amendment and the licence does not contain any specific noise conditions. Noise emissions are adequately managed through the <i>Environmental Protection (Noise) Regulations 1997</i> .	
Monitoring general	L3.1.1 – L3.1.2	<p>Condition 3.1.1 is included to ensure sampling is undertaken in accordance with relevant standards and analysis is carried out by a NATA accredited laboratory (conditions 10 and 12 of the previous version of the licence).</p> <p>Condition 3.1.2 is included to ensure adequate time between sampling events to ensure the sampling is meaningful. The previous version of the licence already required six-monthly sampling to be a minimum of 4 months apart, via the definition for “biannual”.</p>	
Monitoring of inputs	L3.3.1	Condition 3.3.1 has been included as part of the amendment to require the monitoring of the estimated live weight of the animals to be slaughtered based on the number and type of livestock received at the abattoir. This is to ensure that the approved premises production or design capacity of the premises (2,000 tonnes per annual period) is not exceeded, and enable ready comparison with this figure.	
Ambient quality monitoring	L3.4.1	<p>Condition 3.4.1 for the monitoring of groundwater quality has been included on the licence, and is equivalent to condition 10 of the previous version of the licence.</p> <p>Refer to the Emissions to land and Fugitive emissions sections for more detail on the environmental risk assessment supporting the need for groundwater monitoring.</p>	
Improvements	L4.1.1 – 4.1.2	<p>Condition 4.1.1 and 4.1.2 have been added to the licence setting out required improvements:</p> <ul style="list-style-type: none"> - (IR1) To prepare an up to date waste application management plan for all discharges on site and new irrigation areas; and - (IR2) To provide a report on the integrity and permeability of all wastewater containment structures on the Premises. <p>Refer to the Emissions to land and Fugitive emissions sections for more detail on</p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		the environmental risk assessment supporting the need for groundwater monitoring.	
Information	L5.1.2; L5.2.1 - L5.2.2; L5.3.1	<p>Condition 5.1.1 has been added to the licence as part of this amendment for the management and maintenance of records by the Licensee to ensure they are accessible and useful. This condition is consistent with other recently granted instruments by DER.</p> <p>Condition 5.1.2 for the annual audit compliance report has been included on the licence and is the equivalent of condition 16 from the previous version of the licence.</p> <p>Condition 5.1.3 has been added to the licence as part of this amendment for the maintenance of a complaints management system. This condition is consistent with other recently granted instruments by DER, and is particularly relevant in the case unexpected odour complaints are received in future.</p> <p>Condition 5.2.1 for the annual environmental report has also been included on the licence and is the equivalent of conditions 14 and 15 of the previous version of the licence.</p> <p>Condition 5.2.2 has also been included on the licence and is a new requirement to ensure that the Licensee assesses the information within the report against previous monitoring and licence limits, as this will give rise to meaningful assessment of the potential environmental impact of the operations.</p> <p>Condition 13 from the previous version of the licence has not been transferred to this licence as there are no targets; however condition 5.3.1 has been included on the licence to ensure that the CEO is notified of any limit exceedances. The associated form N1 which this condition requires to be completed effectively contains equivalent information to what condition 13 used to require.</p>	



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		Refer to the Emissions to land and Fugitive emissions sections for more detail on the environmental risk assessment supporting the need for reporting of monitoring results.	
Licence Duration	N/A	Having had regard to the <i>Guidance Statement: Licence Duration</i> , the Chief Executive Officer (CEO) of the Department of Environment Regulation has determined that the licence expiry dates for almost all of the licensed prescribed premises were to be amended, and this amendment was given effect on 29 April 2016 by administrative notice. The notice states that the expiry date of licence L8521/2011/1 is now 29 May 2035.	<i>Guidance Statement: Licence Duration</i> <i>Notice of amendment of licence expiry dates section 59B(9) and Section 59(1)(k) Environmental Protection Act 1986 licensed prescribed premises</i>



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
29/06/2016	Proponent sent a copy of draft instrument	No comments received. Signed 21 day waiver form received 8/07/2016	N/A



6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

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



Appendix A

Emissions to land including monitoring

Emissions risk assessment - Operations

The main emission of concern from the Karnet Prison Farm is the direct emissions to land via irrigation of treated wastewater from the abattoir and sewage wastewater treatment plant to the Premises. Emissions to land have been re-assessed as part of this licence amendment due to the addition of abattoir operations and the associated irrigation of wastewater, which was previously not approved under the DER Licence. Additionally, the dedicated irrigation areas have been re-rationalised and updated.

Emission Description

Emission: Discharge of treated wastewater through irrigation of 64.38ha of paddocks (crops and orchards).

Impact: Discharge of treated wastewater resulting in the potential contamination of surface water or groundwater with nutrients and other potential contaminants such as heavy metals and pathogens. Dirk Brook runs across the SW section of the premises and may be a surface water receptor for contamination. Wetlands, classified as resource enhancement are also located within the premises boundary and extend beyond the boundary where they are classified as conservation. Groundwater monitoring from 2014/2015 indicates that the groundwater level on the Premises can be shallow, ranging from 0.5m below the top of bore casing to 5m below top of bore casing. The addition of nutrients and other contaminants to surface water may have ecological consequences, while the contamination of groundwater could result in secondary public health impacts due to the location of a P2 Public Drinking Water Source Area (Serpentine Dam Catchment Area) on the NE corner of the Premises which may receive recharge from shallow groundwater.

Controls: Up to 100kL/day of treated wastewater will be available in total for irrigation on all irrigation fields 1 to 5 totalling an area of 64.4ha of crops and orchards. In summer, irrigation demand will be in excess of the available irrigation area; however, in winter modelling indicates the need for up to maximum of 6.6ML of storage inclusive of a 500mm freeboard to cater for a 1 in 10 year rainfall event. This excess storage is provided by the existing ponds and Vege Dam that provide 7.4ML. Application rates to individual irrigation areas are actively managed with cropping areas able to receive up to 100kL/day while individual orchards able to receive a portion of the treated effluent due to their less conducive soil type.

The abattoir wastewater treatment system consists of three ponds and a lined oxidation pond. Wastewater is then pumped to a tank where the wastewater is chlorinated prior to irrigation. Irrigation Area 1 has an area of 36.3ha, is located at the west end of the premises for the irrigation of the treated abattoir wastewater. Up to 44kL/day of treated wastewater can be irrigated by use of a mobile sprinkler with transfer pipework from the pumps at the lined oxidation pond. The Licensee has conducted water balance modelling and determination of nutrient loading limits using MEDLI (Model for Effluent Disposal using Land Irrigation). Modelling indicates that a minimum of 2ha is required to meet nutrient loading rates for soil risk category B. The Licensee has also committed to the following:

- Stock will be excluded for 48 hours after irrigation ceases with grazing to be undertaken at a rate of 2ha/day;
- Irrigation will not take place during periods of rainfall and begin again at 5mm soil water deficit (testing using tensiometer or similar);
- Soils across the effluent irrigation area, both topsoils and subsoils will be monitored using key parameters to manage potential problems of soil stability and salinity and monitor degradation in soil properties; and



- Impact on ground and surface water sources will be assessed during seasonal monitoring events.

The sewage WWTP has been recently repaired and includes ultra-filtration (UF) membranes for the physical separation of suspended solids, some bacteria and viruses and contains a triple barrier disinfection system via UV disinfection, chlorine dosing and residual monitoring to achieve a Class “A” quality of water for irrigation reuse. Irrigation Areas 2 to 4 total an area of 28.1ha and will be used for the irrigation of treated wastewater from the sewage WWTP. Up to 109kL/day can be applied to the crop irrigation areas and up to 19kL/day can be applied to Irrigation Field No. 5 (orchard).

Irrigation field 2 is irrigated using a portable overhead irrigator that is moved twice weekly to ensure even coverage. Irrigation field 3 is only irrigated as required with a portable overhead irrigator. Irrigation field 4 has a static micro-irrigation system that was supplied, installed and tested for coverage and run-off by a qualified external contractor. Micro-irrigation is utilised to ensure treated wastewater does not come into contact with the surface of the produce. Irrigation field 5 (sports oval) is irrigated at night time only through the use of a static sunken pop-up sprinkler system, installed and maintained by the groundskeeper.

Irrigation of treated wastewater is managed by the Licensee through the Karnet Prison Farm Abattoir Nutrient and Irrigation Management Plan, Recycled Water Quality Management Plan (RWQMP) Karnet Prison Farm Abattoir Irrigation Scheme and the Effluent Irrigation Management Plan for the Karnet Prison Farm (WCG 2010). It is noted that there is no up to date waste application management plan for the combined discharges of both the abattoir and sewage wastewater treatment plants.

The Licensee has committed in their amendment application to comply with the following concentration levels:

Sewage Wastewater Treatment Plant (irrigated to Irrigation Field 2, 3, 4 and 5)		
Parameter	Compliance Value	Monitoring Frequency
E. Coli	<10 cfu/100 mL	Monthly
pH	6.5 – 8.5	Daily or continuously online
Chlorine	0.2 – 2.0 mg/L	Continuous online
Turbidity	<5 NTU	Continuous online

Abattoir Wastewater Treatment System (irrigated to Irrigation Field 1)		
Parameter	Compliance Value	Monitoring Frequency
E. Coli	<1000 cfu/100 mL	Monthly
pH	6.5 – 8.5	Continuous online
Chlorine	0.2 – 2.0 mg/L	Daily or continuously online

The Licensee also complies with the following nutrient loading rates to the irrigation areas:

Irrigation loading limits		
Irrigation area	Parameter	Limit
Irrigation Field No. 1, 2, 3 and 4	Total Nitrogen	180 kg/ha
	Total Phosphorus	20 kg/ha
Irrigation Field No. 5	Total Nitrogen	300 kg/ha
	Total Phosphorus	50 kg/ha

Irrigation Field No. 5 (prison recreation oval) has a higher allowable nutrient loading due to its soil type.

Risk Assessment



Consequence: Moderate

Likelihood: Unlikely

Risk Rating: Moderate

Regulatory Controls:

Condition 1.2.1 and 1.2.2 have been included on the licence to ensure the Licensee directs all abattoir and sewage wastewater to the appropriate wastewater treatment system/s to ensure they are adequately treated prior to irrigation, in accordance with their amendment application.

Condition 2.1.1 has been included on the licence as part of the amendment to require the investigation of the breach of any limit, due to the inclusion of descriptive and quantitative limits in section 2.2 of the licence. Related to this, condition 5.3.1 later in the licence also requires notification of limit breaches to DER. This is equivalent to condition 13 of the previous version of the licence.

As per commitments in the Nutrient and Irrigation Management Plan, condition 4 from the previous version of the licence has been transferred to the amended licence as condition 2.2.1 and ensures that:

- Treated wastewater is only irrigated to the irrigation areas;
- Irrigation doesn't result in surface ponding and/or runoff; and
- Irrigation doesn't occur when it is raining.

Condition 2.2.1 also includes the treated wastewater from the abattoir wastewater treatment system, where it previously only included wastewater from the sewage WWTP.

The licence targets (previous condition 7) have been replicated in condition 2.2.2 as licence limits. The limits are based on the eutrophication risk, taking into account soil type and the fact that wetlands classified as Resource Enhancement and part of Dirk Brook are located within the premises boundary. The labelling of the irrigation areas and exact boundaries have changed slightly from the previous version of the licence, and treated wastewater from the abattoir and treated sewage are now no longer able to be jointly applied to one area, as they were in practice when abattoir operations were excluded from the DER licence.

Condition 3.2.1 has been included on the licence to ensure that the Licensee continues to monitor the quantity and quality of treated effluent irrigated to land (part of condition 10 from the previous version of the licence), and additionally the quantity and quality of treated abattoir wastewater irrigated to land on a quarterly basis. Condition 5 from the previous version of the licence has also been included here as volumetric flow monitoring. Condition 3.2.1 also now requires the monitoring of nutrient loading rates (kg/ha) for clarity. This has been added for clarity, despite the presence of nutrient loading limits in condition 2.2.2 inherently already requiring this.

Condition 6 from the previous version of the licence (treated effluent concentration targets) has not been transferred to this licence as it is considered that the nutrient loading limits set through condition 2.2.2 are sufficient in managing the risk of eutrophication over time. It is also noted that the limits which the Licensee has committed to in their amendment application are already set via Department of Health requirements. However, the quality of the treated effluent and treated abattoir wastewaters will be monitored (condition 3.2.1) and loading rates will be reported (5.2.1). This will enable review of the information by DER over time and the addition of concentration limits in future if appropriate to manage risk.

Condition 3.4.1 (part of condition 10 from the previous version of the licence) has been included on the licence to continue to monitor the ambient groundwater quality to detect whether the irrigation of treated wastewater to land is potentially impacting on the groundwater. Condition 11 from the previous version of the licence has been included as a note under the table in condition 3.4.1 to allow in-field analyses of pH and electrical conductivity.



Condition 4.1.1 and 4.1.2 (improvements) have been added to the licence. As part of this, the Licensee is requested to prepare an updated waste application management plan which encompasses all discharges of treated waste to the premises, being from both the sewage and abattoir wastewater treatments plants. This plan should incorporate current soil testing and validate current application rates against them.

Condition 5.2.1 for the annual environmental report has also been included on the licence and is the equivalent of conditions 14 and 15 of the previous version of the licence. This ensures that the monitoring of treated wastewater quality, irrigation volumes, nutrient loadings and ambient groundwater quality are reported to DER for review every year. This will support the ongoing assessment of environmental impact from the operations on the premises.

Condition 5.2.2 has also been included on the licence and is a new requirement to ensure that the Licensee assesses the information within the annual environmental report against previous monitoring and licence limits, as this will give rise to meaningful assessment of the potential environmental impact of the operations.

Condition 13 from the previous version of the licence has not been transferred to this licence as there are no targets; however condition 5.3.1 has instead been included on the licence to ensure that the CEO is notified of any limit exceedances. The associated form N1 which this condition requires to be completed effectively contains equivalent information to what condition 13 used to require.

In the event that the controls above are not sufficient in managing environmental risk, the general provisions of the *Environmental Protection Act 1986* will also apply. Future amendments to the licence can also be considered in future should unexpected impacts be detected.

Residual Risk

Consequence: Moderate

Likelihood: Unlikely

Risk Rating: Moderate

There is no material change in the overall environmental risk as a result of the addition of licence conditions because the conditions essentially mirror major commitments made by the Licensee in their amendment application.

References:

- General provisions of the *Environmental Protection Act 1986* for pollution/environmental harm.
- Recycled Water Quality Management Plan (RWQMP), Karnet Prison Farm Abattoir Irrigation Scheme, version 3.3, dated 14 June 2016
- Karnet Prison Farm, Nutrient and Irrigation Management Plan, revision 1, dated 23 March 2012

Fugitive emissions

Emissions risk assessment - Operations

The operation of the abattoir and sewage wastewater treatment plants on site inherently pose a number of environmental risks with regards to fugitive emissions of leachate/stormwater and dust.

For the purposes of the assessment, fugitive emission risk assessments are divided into the following key emission types:

- (1) Unintended spills or leakages from chemical and/or hydrocarbons storage on the Premises;
- (2) Stormwater contamination from the lairage yards, abattoir operations generally,



- (3) Stormwater contamination from sludge storage and sludge management;
- (4) Unintended seepage or overtopping of wastewater treatment ponds associated with the sewage wastewater treatment plant or abattoir wastewater treatment plant; and
- (5) Potential dust emissions from animal and vehicle movements.

Emission Description (1)

Emission: Unintended spills or leakages from chemical storage on the premises, such as chlorine and/or hydrocarbons stored on the premises for the operation of the WWTP or day to day operation of the farm.

Impact: Potential contamination of local soils, surface water or groundwater with hydrocarbons, heavy metals or other contaminants. Dirk Brook runs across the SW section of the premises and may be a surface water receptor for contamination. Wetlands, classified as resource enhancement are also located within the premises boundary and extend beyond the boundary where they are classified as conservation. Groundwater monitoring from 2014/2015 indicates that the groundwater level on the Premises can be shallow, ranging from 0.5m below the top of bore casing to 5m below top of bore casing. The addition of contaminants to surface water may have ecological consequences, while the contamination of groundwater could result in secondary public health impacts due to the location of a P2 Public Drinking Water Source Area (Serpentine Dam Catchment Area) on the NE corner of the Premises which may receive recharge from shallow groundwater.

Controls: Minor quantities (<250L) of sodium hypochlorite, alum, citric acid and soda ash are stored on the Premises. The Licensee stated in their original licence application in 2011 that storage would be in accordance with AS 1940:2004.

Risk Assessment

Consequence: Insignificant

Likelihood: Unlikely

Risk Rating: Low

Regulatory Controls

Previous conditions 1 - 3 regarding the storage and management of environmentally hazardous materials have been removed from the licence in accordance with Operational Procedure IR-OP-02 as the conditions are not sufficiently clear or certain. Given the low overall risk, the general provisions of the EP Act relating to pollution and environmental harm, and the unauthorised discharges regulations relating to discharges of certain materials can be used to manage the risks associated with any chemicals or other materials being stored on the Premises.

Residual Risk

Consequence: Insignificant

Likelihood: Unlikely

Risk Rating: Low

References:

- AS 1940:2004 The storage and handling of flammable and combustible liquids;
- Operational Procedure IR-OP-02 Redundant Conditions, Department of Environment Regulation, May 2016;
- General provisions of the *Environmental Protection Act 1986*;
- *Environmental Protection (Unauthorised Discharges) Regulations 2004*.



Emission Description (2)

Emission: Stormwater runoff to the environment contaminated with animal and process waste from the lairage yards and general abattoir operations.

Impact: Potential contamination of local soils, surface water or groundwater with nutrients and other potential contaminants such as pathogens. Dirk Brook runs across the SW section of the premises and may be a surface water receptor for contamination. Wetlands, classified as resource enhancement are also located within the premises boundary and extend beyond the boundary where they are classified as conservation. Groundwater monitoring from 2014/2015 indicates that the groundwater level on the Premises can be shallow, ranging from 0.5m below the top of bore casing to 5m below top of bore casing. The addition of nutrients and other contaminants to surface water may have ecological consequences, while the contamination of groundwater could result in secondary public health impacts due to the location of a P2 Public Drinking Water Source Area (Serpentine Dam Catchment Area) on the NE corner of the Premises which may receive recharge from shallow groundwater.

Controls: All clean stormwater at the abattoir is diverted away from the abattoir and does not reach the abattoir wastewater storage ponds. All potentially contaminated stormwater from the lairage pens and raceways, along with blood and small amounts of fats, is diverted via impervious concrete drains to the abattoir wastewater treatment ponds. The abattoir operations are conducted within enclosed sheds. The lairage yards are undercover to minimise the amount of stormwater generated. Abattoir and screening wastes are collected in 1100L capacity food grade bins located on a concrete hardstand area and are removed by Harvey Beef on a daily basis for offsite disposal.

Risk Assessment

Consequence: Minor

Likelihood: Unlikely

Risk Rating: Moderate

Regulatory Controls

The existing design of the abattoir operation is such that the environmental risk of stormwater contamination is not high. Operational controls have not been set on the licence specifically to manage this risk due to existing conditions which will inherently assist.

Condition 2.2.1 (equivalent to condition 4 from the previous version of the licence) specifies that the only discharge of waste authorised to occur on the Premises is via irrigation to the irrigation areas and the application of stabilised solid waste in accordance with the WA Biosolids Guidelines (see Emissions description (3) below).

Condition 3.4.1 (condition 10 from the previous version of the licence) for groundwater monitoring will continue to assist in detecting unexpected impacts on the environment, with results reported through the annual environmental report in condition 5.2.1 (condition 14 and 15 of the previous version of the licence).

The premises is subject to the *Environmental Protection (Unauthorised Discharges) Regulations 2004* and general provisions of the *EP Act*.

Residual Risk

Consequence: Minor

Likelihood: Unlikely

Risk Rating: Moderate

References:



- General provisions of the *Environmental Protection Act 1986*;
 - *Environmental Protection (Unauthorised Discharges) Regulations 2004*
 - General provisions of the Environmental Protection Act 1986
-

Emission Description (3)

Emission: Stormwater runoff to the environment contaminated from the storage and mixing of abattoir pond sludge in the clay pit area, and from the application of stabilised sludge to land as a soil conditioner.

Impact: Potential contamination of local soils, surface water or groundwater with nutrients and other potential contaminants such as pathogens. Dirk Brook runs across the SW section of the premises and may be a surface water receptor for contamination. Wetlands, classified as resource enhancement are also located within the premises boundary and extend beyond the boundary where they are classified as conservation. Groundwater monitoring from 2014/2015 indicates that the groundwater level on the Premises can be shallow, ranging from 0.5m below the top of bore casing to 5m below top of bore casing. The addition of nutrients and other contaminants to surface water may have ecological consequences, while the contamination of groundwater could result in secondary public health impacts due to the location of a P2 Public Drinking Water Source Area (Serpentine Dam Catchment Area) on the NE corner of the Premises which may receive recharge from shallow groundwater.

Controls: The mixing pit is to be constructed of clay (white kaolin clay sourced onsite) with a size of 20 m by 30 m and 2 m deep. It will be located in an elevated area onsite. Approximately 400m³ of sludge is proposed to be pumped out of the primary settlement pond approximately every 5 years by a contractor using tanker trucks and then pumped into the mixing pit. The sludge will then immediately be mixed with soil, sawdust, hay and other absorptive materials using a front end loader and/or excavators until it becomes a solid, stable mass. The proponent has proposed that any leachate or discharge from the solid mass generated from rainfall will be retained within the pit to be absorbed back into the mix, subject to evaporation or absorbed via the addition of extra soil.

After approximately 6 months, when the sludge has reached a stable mass, the mixture will be spread onto paddocks within the premises as a soil conditioner. The Licensee has committed to only applying the material to land if it meets P1/C1 or P2/C2 quality in accordance with the WA Biosolids Guidelines. Distribution rates will be such that the load rate for the land will not exceed 80kg/ha for nitrogen and 9kg/ha phosphorous. Additionally, spreading of material will occur after the winter rainfall has ceased to minimise the risk of runoff. Spreading will not occur within 500m of Dirk Brook, and is intended to occur on Irrigation Field No 1. Irrigation Field No 1, being the furthest from the prison population, the public drinking water source area, and also offering the largest surface area at the highest elevation.

Any sludge removed from the sewage WWTP (digester tanks) is pumped out by a licensed contractor and disposed of at a licensed facility offsite.

Risk Assessment

Consequence: Minor

Likelihood: Possible

Risk Rating: Moderate

Regulatory Controls

Condition 1.2.3 has been added to the licence to ensure the clay pit used for storage and mixing of sludges is a hardstand (low permeability) and designed to exclude clean stormwater and prevent release of leachate (such as through the use of bund walls).



Condition 1.2.4 (condition 9 from the previous version of the licence) has been included in the licence to ensure sludge from the sewage WWTP continues to be disposed of offsite.

Condition 2.2.1 (equivalent to condition 4 from the previous version of the licence) specifies that the only discharge of waste authorised to occur on the Premises is via irrigation to the irrigation areas, and the application of stabilised solid waste in accordance with the WA Biosolids Guidelines. This inherently includes only applying the waste to Premises if it has appropriate chemical and pathogen contamination levels and is applied at appropriate rates.

Condition 3.4.1 (condition 10 from the previous version of the licence) for groundwater monitoring will continue to assist in detecting unexpected impacts on the environment, with results reported through the annual environmental report in condition 5.2.1 (condition 14 and 15 of the previous version of the licence).

Residual Risk

Consequence: Minor

Likelihood: Unlikely

Risk Rating: Moderate

References:

- 'Western Australian guidelines biosolids management' (Department of Environment and Conservation, December 2012)
- *Environmental Protection (Unauthorised Discharges) Regulations 2004*
- General provisions of the *Environmental Protection Act 1986*

Emission Description (4)

Emission: Unintended seepage or overtopping of wastewater treatment ponds associated with the sewage wastewater treatment plant or abattoir wastewater treatment plant.

Impact: Potential contamination of local soils, surface water or groundwater with nutrients and other potential contaminants such as heavy metals and pathogens. The Premises has a relatively high rainfall of almost 1200mm/year with at least 75% of this received between April and November. Dirk Brook runs across the SW section of the premises and may be a surface water receptor for contamination. Wetlands, classified as resource enhancement are also located within the premises boundary and extend beyond the boundary where they are classified as conservation. Groundwater monitoring from 2014/2015 indicates that the groundwater level on the Premises can be shallow, ranging from 0.5m below the top of bore casing to 5m below top of bore casing. The addition of nutrients and other contaminants to surface water may have ecological consequences, while the contamination of groundwater could result in secondary public health impacts due to the location of a P2 Public Drinking Water Source Area (Serpentine Dam Catchment Area) on the NE corner of the Premises which may receive recharge from shallow groundwater.

Controls: All clean stormwater at the abattoir is diverted away from the abattoir and does not reach the abattoir wastewater storage ponds. The abattoir wastewater treatment system consists of three ponds. A fourth pond, the oxidation pond, is used for storage of the treated wastewater and has a capacity of 1650m³. Ponds 1 to 3 are clay-lined and bunded to prevent stormwater incursion. Pond 4 (oxidation pond) is imperviously lined with synthetic material and includes a culvert drain system around the perimeter to divert stormwater. During heavy storm events, should water level in any of the abattoir ponds extend into the 500mm freeboard which visually monitored on a daily basis, the abattoir will be temporarily shut down and a mobile tanker (nominally 20kL) will be used to remove



excess wastewater. Collected water will be used for irrigation at a later date, or disposed to a licensed disposal facility if the overflow volume exceeds the tanker capacity.

The sewage WWTP consists of a series of enclosed tanks electronically monitored and alarmed 24 hours a day. If the irrigation demand is less than the daily treated effluent production (e.g. winter) overflows from the treated effluent tank can be directed to the Vege Dam or the effluent holding ponds for storage. The exact lining specification of these dams is unknown. In the event of a significant failure of the sewage WWTP, all grey and black water is able to be redirected to the abattoir wastewater treatment ponds where it can be chlorinated and irrigated to Irrigation site 1. Abattoir wastewater will not be directed to the effluent wastewater treatment system.

Risk Assessment

Consequence: Minor

Likelihood: Possible

Risk Rating: Moderate

Regulatory Controls

The risk of overtopping of ponds, given the management measures is not significant. Condition 8 from the previous version of the licence for the management of the sewage WWTP ponds has not been transferred to the amended licence.

Condition 4.1.1 – 4.1.2 (improvements) have been included on the licence to require the licensee to undertake an investigation into the permeability of the lining of all ponds and dams used in conjunction with the abattoir and sewage wastewater treatment plants. It is known that there are a number of clay dams used on site; however the ability of the clay to hold the water is unknown.

The premises is also subject to the *Environmental Protection (Unauthorised Discharges) Regulations 2004* and general provisions of the *EP Act*.

Residual Risk

Consequence: Minor

Likelihood: Possible

Risk Rating: Moderate

References:

- Recycled Water Quality Management Plan (RWQMP), Karnet Prison Farm Abattoir Irrigation Scheme, version 3.3, dated 14 June 2016.
- Karnet Prison Farm, Nutrient and Irrigation Management Plan, revision 1, dated 23 March 2012
- *Environmental Protection (Unauthorised Discharges) Regulations 2004*
- General provisions of the Environmental Protection Act 1986

Emission Description (5)

Emission: Potential dust emissions from animal and vehicle movements onsite.

Impact: Potential nuisance for neighbours. Prisoners reside on the premises. The closest sensitive premises, rural residence, is located 2.3km NW of the premises boundary. A residential area, zoned special rural, is located 3.4km SW of the premises boundary. The wind direction throughout the majority of the year in the morning is an NE or E and is usually a SW during the afternoon. The wind strength, on average, ranges from 8.5 to 15km/hr throughout the year. No complaints relating to dust have been received by DER in the last 4 years.

Controls: Most trafficable areas onsite are bitumen or gravel hardstand. Truck movements on the Premises are limited to one external truck per day which attends to pick up the paunch and bone



contents, one internal truck per day that transfers stock from the holding yard to the abattoir and one suppliers delivery truck on a weekly basis. Livestock are delivered for slaughter a few times per week from a local grazier.

Risk Assessment

Consequence: Insignificant

Likelihood: Unlikely

Risk Rating: Low

Regulatory Controls

Given the low risk and the distance to sensitive receptors, no specified conditions relating to fugitive emissions have been included in the licence at this stage. The general provisions of the *Environmental Protection Act 1986* are considered sufficient to regulate the risk.

Residual Risk

Consequence: Insignificant

Likelihood: Unlikely

Risk Rating: Low

References:

- General provisions of the *Environmental Protection Act 1986*



Appendix B

Condition transfer map

The table below outlines how conditions from the previous version of the licence (amended 9 August 2012) have been transferred into the new format licence as part of this amendment. For more detail and/or justification, refer to the Decision Table.

Old condition/s	Equivalent new condition/s	Comment
1 - 3	n/a	Conditions for the management of hazardous materials have not been transferred to the new licence due to the low environmental risk.
4	2.2.1	The content of condition 4 for the irrigation of wastewater has been moved into the Emissions to land section of the new licence. The new condition 2.2.1 specifies the allowable irrigation areas (which are revised as per amendment application) and requires that irrigation not occur during rainfall or produce surface ponding/runoff.
5	3.2.1	The condition for the monitoring of daily flow irrigated has been incorporated into the Monitoring of emissions to land section of the new licence.
6	n/a	The concentration targets for treated wastewater have not been included in the new licence. These targets were not strict regulatory 'limits' and it is considered that the loading rates (kg/ha/year) from condition 7 which have been transferred into the new licence as limits are sufficient in regulating the risk.
7	2.2.2	As mentioned above, nutrient loading targets from condition 7 have been transferred into the new licence as limits in the Emissions to land section. Irrigation fields have changed in accordance with the licence amendment application. With increased irrigation area as part of the amendment it is not considered that the risk of exceeding these limits is significant.
8	n/a	Conditions for the management of storage ponds or vege dam were not transferred into the new licence due to low environmental risk. Condition 2.2.1 already specifically prohibits any other emission of waste to land other than those permitted via irrigation.
9	1.2.4	Condition for the removal of WWTP sludge transferred directly to the Premises operation section of the licence
10	3.1.1, 3.2.1 and 3.4.1	The condition for the monitoring of effluent and groundwater has been split into the 'Monitoring of emissions to land' and 'Monitoring of ambient groundwater quality' sections, respectively. The requirement for adhering to AS/NZS 5667 is included under the General monitoring condition 3.1.1.
11	3.2.1 and 3.4.1	The allowance for in-situ monitoring of pH and EC for groundwater has been incorporated as a note under condition 3.4.1. This allowance has also been extended to pH in wastewater, given the short holding times (6 hours) under AS/NZS 5667.
12	3.1.1	The requirement for using a NATA-accredited laboratory is included under condition 3.1.1
13	2.1.1 and 5.3.1	The requirement to record and investigate the breaches of any targets has been replicated in the 'General emissions' and 'Notification' sections of the new licence. The required information for notification/reporting is presented in form N1 attached to the licence.
14 – 15	5.1.2, 5.2.1	The AER and AACR conditions have been incorporated into the Reporting section of the licence. The AER condition is presented differently to the previous version of the licence, in a tabular format which cross-references to the relevant conditions of the licence to which the reporting relates, for clarity.