Government of **Western Australia**
Department of **Environment Regulation**

Your ref L8504/2010/1
Our ref DEC12432
Enquiries Cassie Bell
Phone (08) 9842 4566
Fax (08) 9841 7105
Email cassie.bell@der.wa.gov.au

Mr David Campbell
Humifert Pty Ltd
P.O Box 6
SCADDAN WA 6447

Dear Mr. Campbell

***ENVIRONMENTAL PROTECTION ACT 1986*: LICENCE GRANTED**

Premises
Karingal Pastoral Company
Part of Lot 642 on Plan 89093 Grigg Road, SCADDAN WA 6447
Licence Number: L8504/2010/1

A licence under the *Environmental Protection Act 1986* (the Act) has been granted for the above premises. The Department of Environment Regulation will advertise the issuing of this licence in the public notices section of *The West Australian* newspaper.

The licence includes attached conditions. Under section 58(1) of the Act, it is an offence to contravene a condition of a licence. This offence carries a penalty of up to $125,000 and a daily penalty of up to $25,000.

In accordance with section 102(1)(c) of the Act, you have 21 days to appeal the conditions of the licence. Under section 102(3)(a) of the Act, any other person may also appeal the conditions of the licence. To lodge an appeal contact the Office of the Appeals Convenor on 6467 5190 or by email at admin@appealsconvenor.wa.gov.au.

Where a licence is issued for more than one year it requires payment of an annual fee and will cease to have effect if the fee is unpaid. It is the occupier's responsibility to lodge a fee application and pay the annual fee in sufficient time to avoid incurring a late payment fee and for processing to be completed before the licence anniversary date.

If you have any queries regarding the above information, please contact Cassie Bell on (08) 9842 4566.

Yours sincerely

Danielle Eyre
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Thursday, 26 September 2013

The Atrium, 168 St Georges Terrace, Perth WA 6000
Phone (08) 6467 5000 Fax (08) 6467 5562
Postal Address: Locked Bag 33, Cloisters Square, Perth WA 6850
www.der.wa.gov.au

Government of Western Australia
Department of Environment Regulation

Licence

Environmental Protection Act 1986, Part V

Licensee: Humifert Pty Ltd

Licence: L8504/2010/1

Registered office: Blackwood Partners
Level 1, 317 Rokeby Road
SUBIACO WA 6008

ACN: 144 026 862

Premises address: Karingal Pastoral Company
920 Grigg Rd, within co-ordinates (MGA Zone 51) E 370812, N 6301478; E 371542, N 6301415; E 371542, N 6300671; E 370812, N 6300671;
SCADDAN WA 6447
Being part of Lot 642 on Plan 89093 as depicted in Schedule 1.

Issue date: Thursday 26 September 2013

Commencement date: Thursday 26 September 2013

Expiry date: Tuesday 25 September 2018

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
67A	Compost manufacturing and soil blending: premises on which organic material (excluding silage) or waste is stored pending processing, mixing, drying or composting to produce commercial quantities of compost or blended soils.	1000 tonnes or more per year	20,000 tonnes per annual period

Conditions
Subject to this Licence and the conditions set out in the attached pages.

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

Contents

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 protect and conserve the State's environment on behalf of the people of Western Australia.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER works with the business owners, community, consultants, industry and other representatives to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitor and audit compliance with works approvals and licence conditions, take enforcement action as appropriate and develop and implement licensing and industry regulation policy.

Licence requirements
This licence is issued under Part V of the Act. Conditions contained with 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. Operating without a licence is an offence under the Act.

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

Premises description and Licence summary
Humifert Pty Ltd operates a composting facility on their property, "Karingal Pastoral Company" (Karingal), in which organic materials are stored and composted in commercial quantities. Karingal is located 10 kilometres west of the Scaddan town site on Grigg Road within the Esperance Shire. The Scaddan district is a mixed farming area typical of the broader wheatbelt area of Western Australia. The facility is 250 m due south of the Karingal homestead on Lot 642 on Plan 89093. The nearest resident is 1 231 m from facility and has not expressed concerns about odours from the facility. Western Australian EPA buffer distance guidelines indicate a buffer of 1000 m is appropriate. Meteorological statistics indicate predominant wind directions should not affect the nearest neighbour. The next nearest neighbour is approximately 5 km away from the facility.

Relevant environmental infrastructure on site includes:

- 9.46 ha of hardstand including:
  - a 450 m x 166 m composting/windrow area;
  - a 170 m x 70 m manure feedstock storage and truck wash down/cleaning area;
  - a slope with a fall of 4 metres from southeast to northwest; and
  - hardstanding of stable sub-base of heavy clay (tested to achieve a permeability of $1x1.4^{-10}$ m/s at 20°C), 100 millimetre layer of screened and compacted dolomitic rock, and a 75 millimetre layer of water bound clay/granite grit road base.
- A 13 110 kL operational leachate pond (including 1 192 kL within a 500 mm freeboard);
- A 1 379 kL pre-leachate pond (emergency storage);
- A further 7 000 kL emergency leachate storage dam;
- A 6 inch pump with significant capacity to extract water from and between the leachate storage areas; and
- Three groundwater monitoring bores, including KCB01 up-gradient (control) bore and KCB02 & KCB03 down-gradient (impact) bores.

At the maximum approved production of 20 000 tonnes per year, 3 000 tonnes of cereal straw or equivalent will be utilized annually and up to 1 000 tonnes will be stored on site. Amounts of waste will be variable each year depending on C:N ratios; however indications are as follows:

- Abattoir waste (paunch contents): 1 500 tonnes
- Animal excreta (manure): 1 000 tonnes
- Wheat/Barley seconds: 1 000 tonnes

- Grain dust: 500 tonnes
- Spoiled grain : 500 tonnes
- Green waste: availability dependant

The manure will include pig manure from the Shark Lake piggery, chicken manure from Serpentine, sheep manure and cattle manure from the Shark Lake Abattoir, and sheep and cattle manure from the Esperance truck wash bay. Abattoir waste will include paunch material from the Shark Lake Abattoir. Any increase in the production of compost beyond the approved 20 000 tonnes annually or involving additional waste types (e.g. blood) will require a works approval from DER.

Further details on waste types and storage

Paunch material from the abattoir is a dry spadeable product and does not refer to the intestines of the animal itself but rather the contents which are essentially digested grass and other organic matter. Paunch material does not contain any meat products or large products not able to be easily mixed into the composting process. The spadeable paunch material is transported to site in an enclosed truck whenever the product is required and available and loaded into a stockpile on the hardstand for immediate incorporation into the windrows by a loader. The frequency and time taken to incorporate the waste will depends on the C:N ratio in the material as to the requirements of the windrows and can take a number of hours to complete. Humifert does not accept any paunch which has been waiting too long and/or has gone putrid, for odour purposes.

It is likely that up to 200 tonnes of pig manure/straw mixture and 200 tonnes of straight pig manure will be on site from time to time. 50 tonnes of chicken manure will be on site most of the time. Other manures will be brought to site on an as required basis.

Should biosolids become available within the Esperance Shire (from the Esperance Wastewater Treatment Plant) in future, Humifert may use them as a source of nitrogen in the composting process. Biosolids will be in a dry-spadeable form before acceptance such that they are not a controlled waste. Biosolids will be unloaded straight into the bunded areas of the hardstand and managed according to the "Western Australian Guidelines for Biosolids Management" 2012. The biosolids received will be tested for pathogens and contaminants at the end of processing. The use of biosolids in the process is likely to require a separate approval from the Department of Health (WA).

Operation of windrows

The maximum number of windrows on the hardstand at full production is 64. Each windrow is approximately 3.5 m wide and there is 3.5 m spacing between each row. This enables 20 000 tons of compost to be produced per annum on a 10 week cycle. The compost produced is for personal use; however surplus will be sold if available and cash-flow dictates.

The product is produced according to a recipe where the C:N ratio is a measured calculation along with porosity ratings for the different feedstock. The compost product is produced under strict aerobic conditions which are regularly monitored and recorded. The temperatures and times at those temperatures are recorded so correct management can occur to eliminate pathogens and weed seeds. The compost must achieve 65 degrees Celsius for a minimum of 15 days and be turned 5 times in this period. If this is not achieved then the windrow is dismantled and reused as unfinished compost in a new windrow, and the reason for the lack of temperature ascertained. High temperatures sustained for this period of time kill any pathogens that may be present. The finished product is tested by an accredited laboratory for the presence of pathogens

The windrows are placed in a northwest-southeast direction on the hardstand to maximize water movement directly off the area to minimise water running through the base of the windrow. "Best practice" strategies, as outlined in the Victorian Guidelines for composting are adhered to. The finished product is tested on an annual basis or when there is a change in the base recipe; product is tested for heavy metals, human pathogens, chemical contaminants, sulfides, salts, and mineral levels.

This Licence is for the operation of a new facility established under works approval W4678/2010/1.

The licences and works approvals issued for the Premises:

Instrument log		
Instrument	**Issued**	**Description**
W4678/2010/1	10/06/2010	New application
W4678/2010/1	13/06/2013	Amendment to extend expiry date of works approval
L8504/2010/1	26/09/2013	Licence issue

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:

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

"AHD" means the Australian height datum;

"annual period" means the inclusive period from 1 September until 31 August in the following year;

"ARI" means Average Recurrence Interval;

"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 5667.11" 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 or target is measured or a monitoring result is obtained;

"biosolids" means solid, semi-solid or slurry material produced by the treatment of sewage (sewage sludge);

"cfu/100mL" means coliform forming units per 100 millilitres;

"compost" means an organic product that has undergone controlled aerobic and thermophilic biological transformation through the composting process;

"composting" the process whereby organic materials are microbiologically transformed under controlled aerobic conditions.

"controlled waste" has the definition in Environmental Protection (Controlled Waste) Regulations 2004;

"Director" means Director, Environmental Regulation Division of the Department of Environment Regulation for and on behalf of the Chief Executive Officer as delegated under Section 20 of the *Environmental Protection Act 1986;*

"Director" for the purpose of correspondence means;

Regional Leader, Industry Regulation, South Coast Region
Department of Environment Regulation

120 Albany Hwy
ALBANY WA 6330
Telephone: (08) 9842 4567
Facsimile: (08) 9841 7105
Email: Industryregsalbany@der.wa.gov.au;

"Emergency storage" means the additional area available for the storage of excess leachate, as labelled "Emergency Storage" in the Premises Map in Schedule 1;

"feedstock" means the organic material used in the composting process and listed in Table 1.3.1;

"freeboard" means the distance between the maximum water surface elevations and the top of retaining banks or structures. Freeboard is provided to prevent overtopping due to unforeseen conditions, and/or events greater than the maximum design event of the structure;

"freeboard marker" means a surveyed measuring device installed in a pond that enables the freeboard of that pond to be visually measured in millimetres at any time;

"fugitive emissions" means all emissions not arising from point sources identified in Sections 2.2, 2.3, 2.4 and 2.5;

"green waste" means waste that originates from untreated trees or plants;

"hardstand" means the area as labelled "Hardstand Area" in the Premises Map in Schedule 1;

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

"Leachate pond" means the pond storing leachate on an operational basis, as labelled "Leachate Pond" in the Premises Map in Schedule 1;

"Licence" means this Licence numbered L8504/2010/1 and issued under the *Environmental Protection Act 1986;*

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

"manure" means any organic product composed mainly of animal excreta;

"manure feedstock storage area" means the storage area labelled as "Manure feedstocks" in the Premises Map in Schedule 1;

"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;

"pasteurisation" means the process whereby organic materials are treated to significantly reduce the numbers of plant and animal pathogens and plant propagules;

"**paunch contents**" means contents of herbivorous animal intestines, which are spadeable and do not contain any meat products or large objects unable to be easily mixed into the composting process;

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

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

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

"solid" means material that:

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

"usual working day" means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia;

"**wash down / cleaning area**" means the area for the wash down of trucks as labelled "wash down / cleaning area" in the Premises Map in Schedule 1;

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the current version of that standard.

1.1.4 Any reference to a Guideline or Code of Practice in the Licence means the current version of the Guideline or Code of Practice.

1.2 General conditions

1.2.1 Nothing in the Licence shall be taken to authorise any emission that is not mentioned in the Licence, where the emission amounts to:

(a) pollution;
(b) unreasonable emission;
(c) discharge of waste in circumstances likely to cause pollution; or
(d) being contrary to any written law.

1.2.2 The Licensee shall operate and maintain all pollution control and monitoring equipment to the manufacturer's specification or any relevant and effective internal management system.

1.2.3 The Licensee shall immediately recover, or remove and dispose of spills of environmentally hazardous materials outside an engineered containment system.

1.3 Premises operation

1.3.1 The Licensee shall only accept waste on to the Premises if:

(a) it is of a type listed in Table 1.3.1;
(b) the quantity accepted is below any quantity limit listed in Table 1.3.1; and
(c) it meets any specification listed in Table 1.3.1.

Table 1.3.1: Waste acceptance		
Waste type	**Quantity limit tonnes / year**	**Specification[1]**
Manure	None specified	None specified
Paunch contents		Accepted only in solid form and on an as required basis.
Biosolids		Acceptance is subject to seeking any relevant approvals from Department of Health (Western Australia)
Wheat/Barley seconds		None specified
Grain dust		
Spoiled grain		
Hay		
Straw		
Green waste		

Note 1: Additional requirements for the acceptance of controlled waste (including animal effluent or residues; and vegetable and food processing waste) are set out in the Environmental Protection (Controlled Waste) Regulations 2004.

1.3.2 The Licensee shall ensure that wastes accepted onto the Premises are only subjected to the processes set out in Table 1.3.2 and in accordance with any process limits described in that Table.

Table 1.3.2: Processing of materials		
Waste type	**Process**	**Process requirements**
Manure	Receipt, handling and storage prior to composting	i) Stored on the manure feedstock storage area. ii) Covered with lime, green waste, or other effective materials at all times whilst being stored to prevent odour emissions.
Paunch contents		i) Transported to site in an enclosed truck as required. ii) Unloaded straight onto the hardstand. iii) Immediately incorporated into the windrows.
Biosolids		i) Unloaded straight onto the hardstand. ii) Managed according to the "Western Australian Guidelines for Biosolids Management" 2012. iii) Managed according to any Department of Health requirements.
All waste types as detailed in Table 1.3.1	Treatment by composting and pasteurisation	i) Composting is undertaken within the hardstand. ii) Windrows shall be turned regularly to ensure aerobic conditions are maintained. iii) The core temperature of the composting pile is maintained between 55 °C and 65 °C for a period of at least three days. iv) No more than 20 000 tonnes of compost product is produced within any annual period

1.3.3 The Licensee shall ensure that waste is stored and/or contained within infrastructure in accordance with Table 1.3.3 and that the integrity of the containment infrastructure is maintained.

Table 1.3.3: Containment infrastructure		
Containment area/infrastructure	**Material**	**Infrastructure requirements**
Hardstand Wash down / cleaning area Manure feedstocks storage area	Waste types as detailed in Table 1.3.1 (feedstocks)	i) Bunded hardstanding area. ii) All areas drain to the leachate pond for containment of contaminated runoff. iii) Uncontaminated stormwater runoff from surrounding site drainage is prevented from entering.
Leachate pond Emergency storage	Contaminated stormwater and leachate	i) Lined to achieve a permeability of less than 10^{-9} m/s or equivalent. ii) A minimum top of embankment freeboard of 500 mm is maintained at all times. iii) Capacity to store a 72 hour duration, 1 in 10 year ARI critical rainfall event without overflow. iv) Uncontaminated stormwater runoff from site drainage is prevented from entering the leachate pond or causing the erosion of any outer pond embankments. v) Vegetation is prevented from encroaching onto the inner pond embankments. vi) Contents must evaporate in the pond and/or be reused in the composting process, and cannot otherwise be discharged to the environment.

2 Emissions

2.1 General

There are no specified conditions relating to emissions in this section.

2.2-2.4 Point source emissions to air, surface water and groundwater

There are no specified conditions relating to point source emissions to air, surface water or groundwater in this section.

2.5 Emissions to land

There are no specified conditions relating to emissions to land in this section.

2.6 Fugitive emissions

2.6.1 The Licensee shall use all reasonable and practical measures to prevent and where that is not practicable to minimise dust emissions from the Premises.

2.6.2 The Licensee shall ensure that no visible dust generated by the activities on the Premises crosses the boundary of the Premises.

2.7 Odour

2.7.1 The Licensee shall ensure that odour emitted from the Premises does not unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person who is not on the Premises.

2.8 Noise

There are no specified conditions relating to noise in this section.

3 Monitoring

3.1 General monitoring

3.1.1 The licensee shall ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
(c) all laboratory samples are submitted to a laboratory with current NATA accreditation for the parameters to be measured [unless indicated otherwise in relevant table].

3.1.2 The Licensee shall ensure that
(a) annual monitoring is undertaken at least 9 months apart.

3.2-3.4 Monitoring of point source emissions to air, surface water and groundwater

There are no specified conditions relating to monitoring of point source emissions to air, surface water or groundwater in this section.

3.5 Monitoring of emissions to land

There are no specified conditions relating to monitoring of emissions to land in this section.

3.6 Monitoring of inputs and outputs

3.6.1 The Licensee shall undertake the monitoring in Table 3.6.1 according to the specifications in that table.

Table 3.6.1: Monitoring of inputs and outputs

Input/Output	Parameter	Units	Averaging period	Frequency
Mass of each input listed in Table 1.3.1	Waste type as detailed in Table 1.3.1	Tonnes	Annual period	Each load arriving at the Premises
Final compost product	Final product applied on the premises and/or leaving the premises	Tonnes	Annual period	Each batch produced

3.7 Process monitoring

3.7.1 The Licensee shall undertake the monitoring in Table 3.7.1 according to the specifications in that table.

Table 3.7.1: Process monitoring

Monitoring point reference	Process description	Parameter	Units	Frequency	Method
Compost windrows	Composting	Temperature	°C	Daily	None specified
		Moisture content	%	Daily	None specified

3.8 Ambient environmental quality monitoring

3.8.1 The Licensee shall undertake the monitoring in Table 3.8.1 according to the specifications in that table and record and investigate results that do not meet any target specified.

Table 3.8.1: Monitoring of ambient groundwater quality				
Monitoring point reference	**Parameter**	**Units**	**Averaging period**	**Frequency**
▪ Groundwater monitoring bores KCB01 and KCB02 (as depicted in the Premises Map in Schedule 1); and ▪ KCB03 (as depicted in the Premises Map in Schedule 1) OR any additional monitoring bore installed in accordance with condition 4.1.2	Standing water level	m(AHD)	Spot sample	Annual
	pH			
	Electrical conductivity	µS/cm		
	Total Dissolved Solids (calculated from electrical conductivity)	mg/L		
	Biochemical Oxygen Demand			
	Total Nitrogen			
	Ammonium-Nitrogen			
	Nitrate + Nitrite Nitrogen			
	Total Phosphorus			
	E. coli	cfu/100 mL		

3.9 Meteorological monitoring

There are no specified conditions relating to meteorological monitoring in this section.

4 Improvements

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

4.1.2 The Licensee, for improvements not specifically requiring a written submission, shall write to the Director stating whether and how the Licensee is compliant with the improvement within one week of the completion date specified in Table 4.1.1.

Table 4.1.1: Improvement program

Improvement reference	Improvement	Date of completion
IR1	If a sample of groundwater is not able to be taken and analysed in accordance with condition 3.8.1 within 10 months of the issue date of this licence, the licensee shall install a new functional groundwater monitoring bore, located up-gradient of the composting infrastructure to capture the control condition of the groundwater. The bore shall be installed in accordance with Department of Water's "Water Quality Protection Note 30 – Groundwater monitoring bores" (February 2006).	12 months from the issue date of this licence, or prior
IR2	The licensee shall, subject to completion of IR1, submit to the Director the bore construction log for the new groundwater monitoring bore.	13 months from the issue date of this licence, or prior
IR3	The licensee shall install freeboard marker/s in the leachate pond and emergency storage areas (as depicted in the Premises Map in Schedule 1).	31 December 2013, or prior

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 ensure that:
- (a) any person left in charge of the Premises is aware of the conditions of the Licence and has access at all times to the Licence or copies thereof; and
- (b) any person who performs tasks on the Premises is informed of all of the conditions of the Licence that relate to the tasks which that person is performing.

5.1.3 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.

5.1.4 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 Director an Annual Environmental Report within 28 calendar days after the end of 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 or any incidents that have occurred during the annual period and any action taken	None specified
5.1.3	Compliance	Annual Audit Compliance Report (AACR)
5.1.4	Complaints summary	None specified
Table 3.6.1	Inputs and outputs	None specified
Table 3.7.1	Process monitoring	None specified
Table 3.8.1	Results of monitoring of ambient groundwater quality	None specified

Note 1: Forms are in Schedule 2

5.2.2 The Licensee shall ensure that the Annual Environmental Report also contains:
- (a) an assessment of the information contained within the report against previous monitoring results and Licence limits and/or targets;

(b) presentation of monitoring results with any previous monitoring results in graphical format; and

(c) a list of any original monitoring reports submitted to the Licensee from third parties for the annual period and make these reports available on request.

5.3 Notification

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

Table 5.3.1: Notification requirements

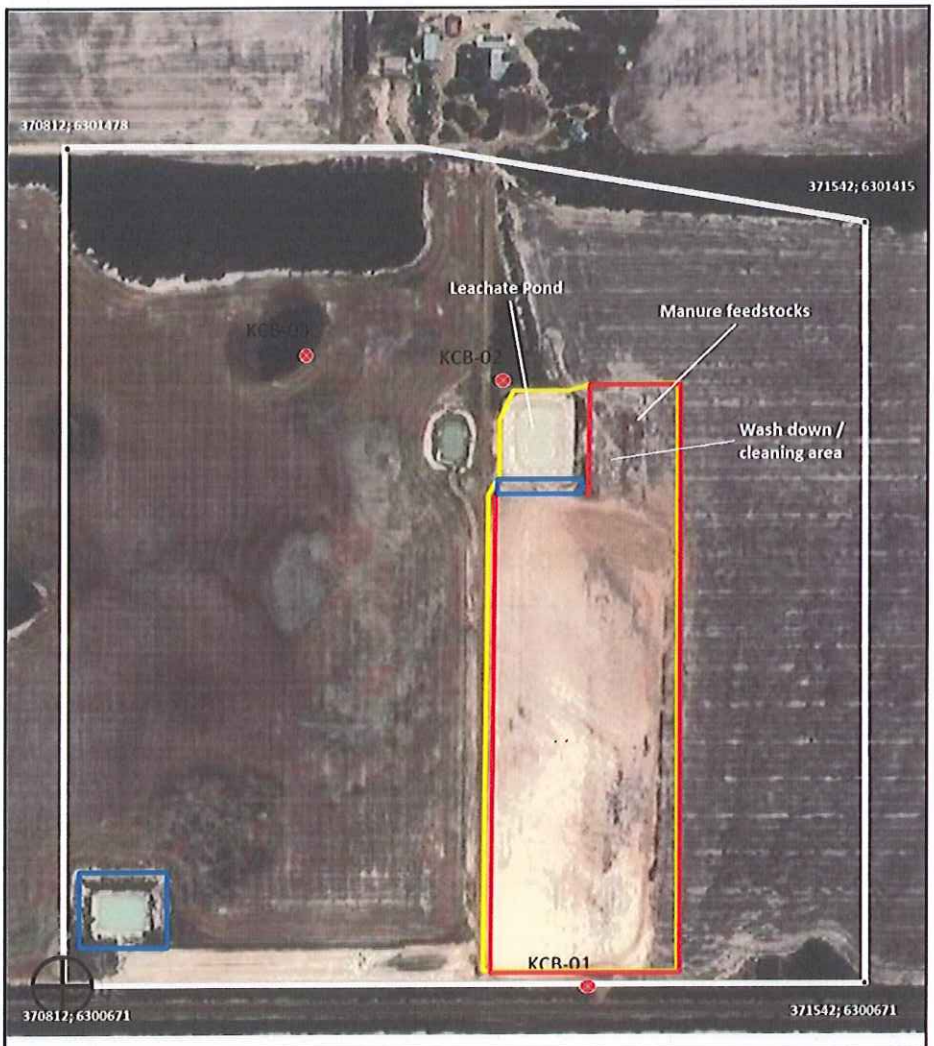
Condition or table (if relevant)	Parameter	Notification requirement[1]	Format or form[2]
-	Any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution	Part A: As soon as practicable but no later than 5pm of the next usual working day. 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 white line depicts the Premises boundary.



HUMIFERT PTY LTD		COMPOSTING FACILITY LOCATION MAP	
Revision	C	Location	Scaddan
Date	17-Sep-13	Reference	370812E 6300671S
Produced By	MT	Projection	MGA GDA94 Z51

N 0 200m

LEGEND

- Prescribed Premises Boundary
- Hardstand Area
- Leachate Pond Catchment
- Emergency Storage
- Monitoring Well

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.

Licence:	L8504/2010/1	Licensee:	Humifert Pty Ltd
Form:	AACR	Period:	
Name:	Annual Audit Compliance Report		

Annual Audit Compliance Report

Section A: Statement of compliance with Licence conditions

Were all conditions of licence complied with within the annual period?		
Yes	□	Initial Sections A & B, then proceed to Section C
No	□	Initial Section A, then 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 B: Details of non-compliance with Licence condition

a) Licence condition not complied with?	
b) Date(s) b) Date(s) and time(s) the non compliance occurred, if applicable?	
c) Was this non compliance reported to DER?	
☐ Yes, and ☐ Reported to DER verbally Date ☐ Reported to DER in writing Date	☐ No
d) Has DER taken, or finalised any action in relation to the non compliance?	
e) Summary of particulars of non compliance, and what was the environmental impact?	
f) If relevant, the precise location where the non compliance occurred (attach map or diagram)	
g) Cause of non compliance	
h) Action taken or that will be taken to mitigate any adverse effects of the non compliance	
i) Action taken or that will be taken to prevent recurrence of the non compliance	

Please use a separate page for each Licence condition that was not complied with. Each page must be initialled by the person(s) who signs Section C of this AACR

Initial:

Section C: Signature and certification

This AACR must only be signed by a person(s) with legal authority to sign it as defined 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 AACR must be signed and certified:
an individual	□	by the individual Licence holder, or
	□	by a person approved in writing by the Chief Executive Officer (CEO) of DER to sign on the Licensee's behalf.
a corporation	□	by affixing the common seal of the Licensee in accordance with the Corporations Act 2001; or
	□	by two directors of the Licensee; or
	□	by a director and a company secretary of the Licensee, or
	□	if the Licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	□	by the principal executive officer of the Licensee; or
	□	by a person with authority to sign on the Licensee's behalf who is approved in writing by the CEO of DER.
A public authority (other than a local government)	□	by the principal executive officer of the Licensee; or
	□	by a person with authority to sign on the Licensee's behalf who is approved in writing by the CEO of DER.
a local government	□	by the CEO of the Licensee; or
	□	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 AACR is correct and not false or misleading in a material particular.

Signature: _____

Name: (printed) _____

Position: _____

Date: _____/_____/_____

Seal (if signing under seal)

Signature: _____

Name: (printed) _____

Position: _____

Date: _____/_____/_____

Licence: L8504/2010/1 Licensee: Humifert Lty Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit or any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution.

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	

Notification requirements for any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution	
Date and time of event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken , or intended to be taken, to stop any emission	
Description of the failure or accident	

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 Humifert Pty Ltd	
Date	

Government of Western Australia
Department of Environment Regulation

ENVIRONMENTAL ASSESSMENT REPORT

LICENCE NUMBER: L8504/2010/1
LICENCE FILE NUMBER: DEC12432
APPLICATION DATE: 3/12/2010
EXPIRY DATE: 25/09/2018

PREMISES DETAILS

LICENCE HOLDER AND OCCUPIER
Humifert Pty Ltd
Level 1, 317 Rokeby Road
SUBIACO WA 6008
ACN: 144 026 862

PREMISES
Karingal Pastoral Company
920 Grigg Rd, within co-ordinates (MGA Zone 51) E 370812, N 6301478; E 371542, N 6301415; E 371542, N 6300671; E 370812, N 6300671;
SCADDAN WA 6447
Being part of Lot 642 on Plan 89093 (Figure 2)

PRESCRIBED PREMISES CATEGORY

Category number*	Category Description*	Category Production or Design Capacity*	Premises Production or Design Capacity#	Premises Fee Component**
67A	Compost manufacturing and soil blending: premises on which organic material (excluding silage) or waste is stored pending processing, mixing, drying or composting to produce commercial quantities of compost or blended soils.	1,000 tonnes or more per year	20,000 tonnes per year	More than 5,000 but not more than 50,000 tonnes per year

* From Schedule 1 of the Environmental Protection Regulations 1987
\# From application
** From Schedule 4 of the Environmental Protection Regulations 1987

This Environmental Assessment Report (EAR) has been drafted for the purposes of detailing information on the management and mitigation of emissions and discharges from the prescribed premises. The objective of the EAR is to provide a risk assessment of emissions and discharges, and information on the management of other activities occurring onsite which are not related to the control of emissions and discharges from the prescribed premises activity. This does not restrict DER to assessing only those emissions and discharges generated from the activities that cause the premises to become prescribed premises.

Basis of Assessment
Karingal Pastoral Company (Karingal) has been assessed as "prescribed premises" category number 67A under Schedule 1 of the Environmental Protection Regulations 1987.

> *67A: Compost manufacturing and soil blending: premises on which organic material (excluding silage) or waste is stored pending processing, mixing, drying or composting to produce commercial quantities of compost or blended soils. 1,000 tonnes or more per year.*

Humifert Pty Ltd is seeking to operate a composting facility on their property, "Karingal", in which organic materials will be stored and composted in commercial quantities. More specifically, carbon sources including wheat, barley, canola straw and lupin header chaff will be stored on site and composted with nitrogen sources including abattoir waste (paunch contents) and animal manure (from pigs, chicken, sheep and cattle), of which abattoir wastes and the majority of manure will be brought to site in a spadeable form (not a controlled waste) and on an as-required basis with exception to approximately 200 tonnes pig manure and 50 tonnes of chicken manure which will be stored on site from time to time. Both the nominated throughput and design capacity of the site is for the production of 20,000 tonnes of compost per year.

1.0 BACKGROUND

1.1 GENERAL COMPANY DESCRIPTION

Humifert Pty Ltd is a local company owned by David and Linda Campbell who reside in Scaddan, Western Australia. David and Linda also own Karranga Station Pty Ltd (registered in 2003) under which they undertake cropping activities on their properties, including both the Karingal homestead in which the composting is proposed to take place, and another property called Karranga Station also located in Scaddan. In the past, the properties were also used for sheep farming; however this has not occurred for more than 12 years. David and Linda Campbell experiment in and implement biological farming practices, including growing micro-organisms for application to land. Humifert Pty Ltd does not hold any other licences with DER.

1.2 LOCATION OF PREMISES

Karingal is located 10 kilometres west of Scaddan on Grigg road which is 1.5 kilometres north of the Scaddan town site within the Esperance Shire (Figure 1). The Scaddan district is a mixed farming area typical of the broader wheatbelt area of Western Australia. Scaddan is located in "The Mallee" sub region of the "South Coast" region of Western Australia.

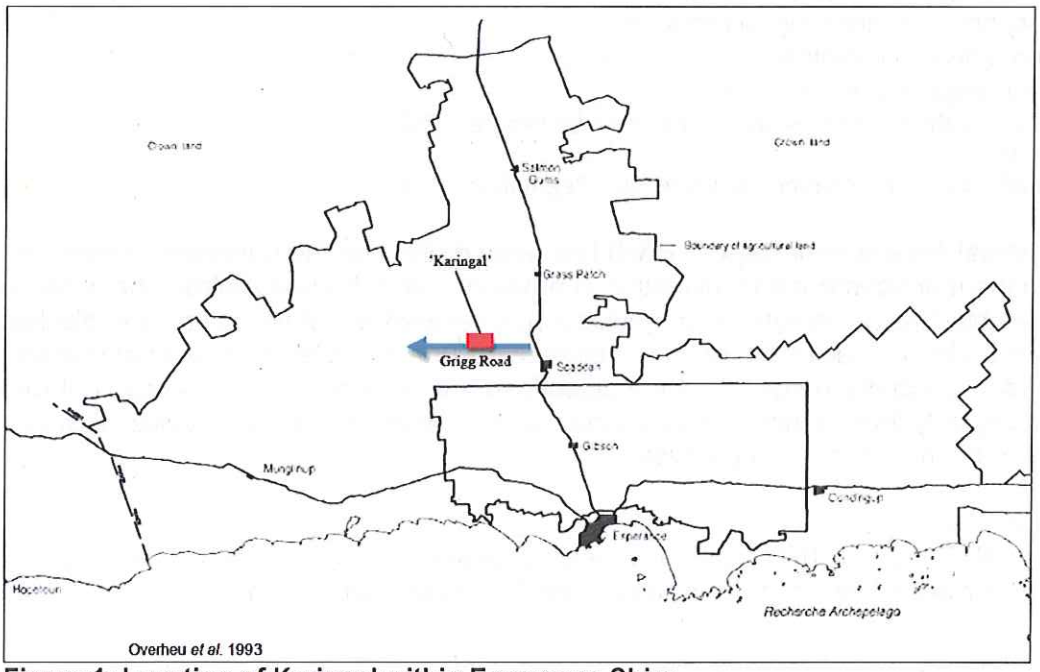


Figure 1: Location of Karingal within Esperance Shire

The location of the composting facility is 250m due south of the "Karingal" homestead on Esperance Lot 642 on Plan 89093, Grigg Rd, on a north-facing slope (Figure 2).

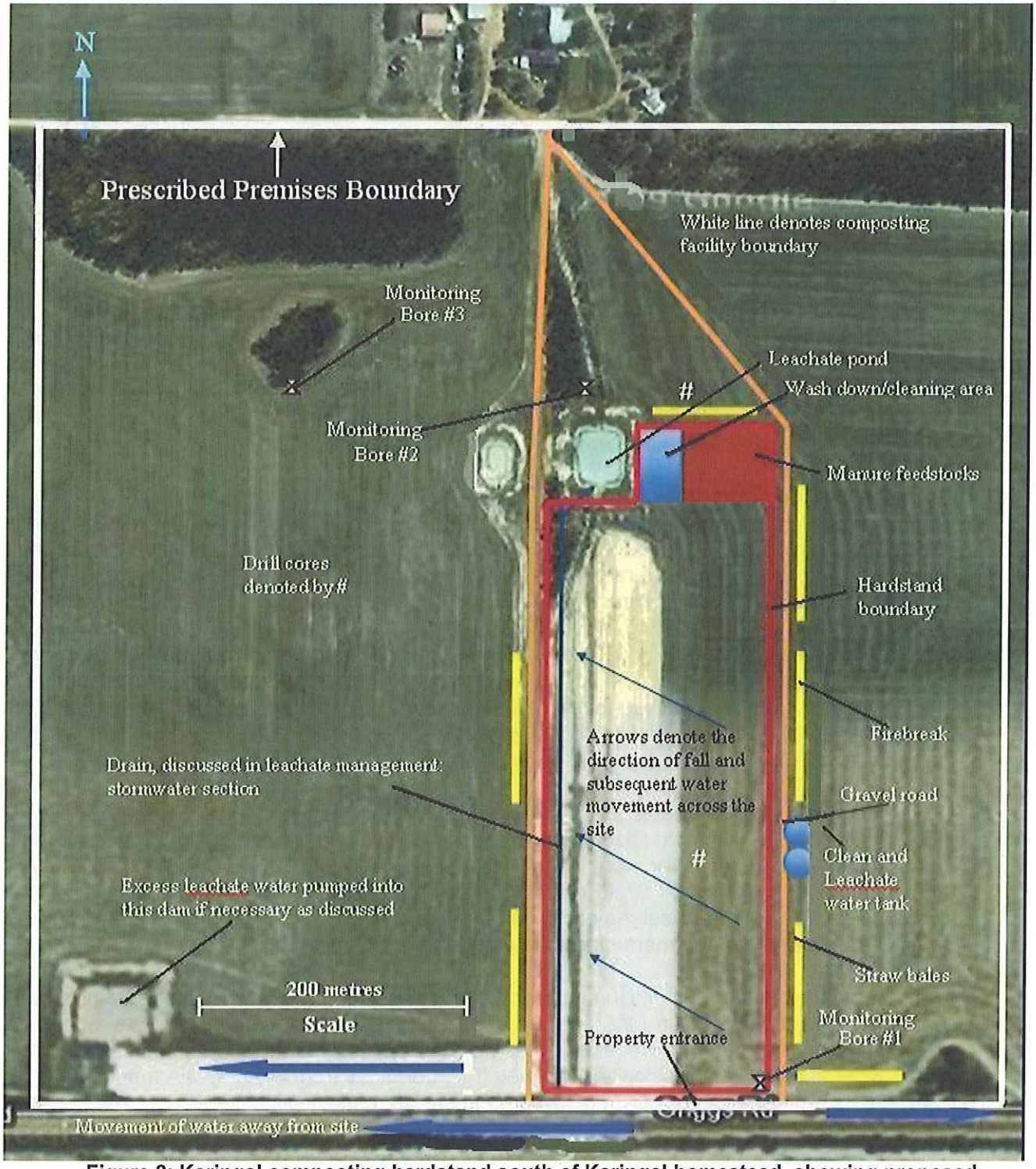


Figure 2: Karingal composting hardstand south of Karingal homestead, showing proposed infrastructure and slope of site.

The nearest resident is 1231m from facility and has not expressed concerns about odours from the facility. The Victorian Environmental Protection Authority Guidelines for Composting recommend a 1,750m buffer for this kind of composting activity; however the meteorological

statistics indicate predominant wind directions should not affect the nearest neighbour. The next nearest neighbour is approximately 5km away from the facility.

Climate

The Scaddan district has an annual rainfall much lower than that of Esperance; with a 63 year average of 370.9 millimetres per annum. There is an automatic weather station situated in Scaddan approximately 5 kilometres from the composting facility which has a 12-year rainfall average of 409.9 millimetres per annum.

Topography

The property has slightly undulating hills with poorly formed waterways feeding runoff water into internal lakes. The drainage system of the property is classed as an "internal system" with no clearly defined gullies leading into a river system. Drainage across the majority of the Mallee region is into numerous saline lakes.

Soils

The Mallee is typified by alkaline soils formed by wind-blown deposits from the Eucla basin which is comprised of limestone. There have been nine soil types identified by Overheu et al. (1993) in the region; ranging from duplex columnar, yellow, sodic alkaline clays through to deep siliceous yellow and brown uniform sands. The majority of the soils in the Mallee region are of the former type and range from 3-4 metres in depth.

Geology and Hydrology

The Mallee region is underlain at around 30 metres by the "Yilgarn Craton" which is made up of granitic and gneissic rocks. Lying between the surface clay and the granitic base is siliceous gritty sand fully saturated with saline water. A DAFWA bore-monitoring site was installed in 2008 at the intersection of Grigg Road and Belgium Road. This site is 15 kilometres from the composting facility. The depth to groundwater was 6.40 m below ground level (02/09/09), with a salinity (EC) of 6,080 mS/m (seawater is approximately 5,500 mS/m) and a pH of 4.05 (slightly acidic). Depth to groundwater in the Scaddan region ranges from 5 to 20 metres from the soil surface with a median of 9 metres (Alderman et al. 2005). Alderman et al. (2005) also found that groundwater gradients are very low, with slopes ranging from 0.5 - 0.02%, suggesting groundwater flow will be minimal.

Two cores were drilled on the 28th January 2009, at each end of the hardstand (Figure 2). The northern core (near leachate pond) reached 8m without finding groundwater and the natural impervious clay layer went to a depth of 5m. The southern core showed the natural impervious clay went to 4m while the sand was dry at 6m deep. The composting site was once utilized as a roaded catchment for a farm dam. A site visit in February 2009 by DER officers confirmed that the material on site appeared to be suitable clay.

As part of the works approval, Humifert has installed one monitoring bore upstream (Bore #1) and two downstream (Bore #2 and Bore #3) as depicted in Figure 2. The upstream monitoring bore was dry; however samples from the two downstream bores taken in August 2013 were analysed and basically confirmed the inferences from the DAFWA monitoring site, with the following key results from bore #2 and bore #3 respectively:

- EC of 21 000 and 65 000;
- pH of 6.3 and 3.2;
- Total Nitrogen of 1.8 and 1.6 mg/L;
- Total Phosphorus of 0.42 and 0.33 mg/L; and
- Standing water levels of 4.06 and 3.07 metres below ground level.

The nearest natural water source is an internally drained natural salt lake which is 1385 metres to the west of the composting facility. This surface water is well beyond the minimum of 100m prescribed in section 3.2 of the Victorian EPA Composting Guidelines (refer 1.4.2).

Flora

The farming land was originally timbered from Mallee scrub across the undulating plains and Yate trees are present in the swamps. There are no known rare flora or fauna species on the property. The majority of the property is cleared agricultural land and the composting facility did not involve any further clearing. A DER GIS Viewer search of the property also identified no declared threatened or rare flora in the area.

1.3 PROPOSAL and PROCESS DESCRIPTION

Construction (Works Approval W4678/2010/1)

This proposal was to develop a compacted clay hardstand on an existing, dam catchment to the area of 6.3 hectares. This area will be able to produce 20,000 tonnes of compost per year. The design ensured that any runoff from the composting hardstand will be captured in a leachate dam. The existing leachate pond at the base of the catchment area was to be upgraded and enlarged to a capacity of 8000kL to contain all the leachate off the catchment in a one in ten year, 72 hour rainfall event. A water balance for the dam was submitted and assessed by DER as part of the works approval application. Permeability tests on the in situ clay commissioned by the applicant confirmed that the liner of the dam would achieve a permeability of less than 10^{-9}m/s once compacted.

In reality, the composting hardstand was constructed wider than proposed, measuring a total 9.46 ha including a 450m x 166m composting area and 170m x 70m manure feedstock storage area (versus originally proposed 450m x 140m compost hardstand and 120 x 55m feedstock area) due to additional space being required for the windrows, as learned during the construction period from small trials conducted. The hardstand slopes from southeast to northwest; the amount of fall being 4.0 metres which translates to a slope of less than 1% and less than 1 degree. This gradient is small enough not to be a problem during a high volume rainfall event, but large enough to allow gradual collection of any leachate from the hardstand. The hardstand was constructed in accordance with the Department of Water's Water quality protection note #27 *Liners for containing pollutants, using engineered soils* June 2010.

The leachate pond is also constructed on a stable sub-base of heavy clay. A 100 millimetre layer of screened dolomitic rock was compacted on top of the impervious base before another 10 millimetre layer of water bound clay/granite grit road base was added. This surface will allow all weather operations to continue with ease on the facility. The road base was freighted from Esperance as there was no localised gravel in the area.

The leachate pond design (originally proposed to be 8000 kL) was revised during the construction period and constructed larger (13110 kL) in reality through enlarging the dam bank height, using the same in situ low-permeability clay as the hardstand. The pond was required to be enlarged due to errors in the original water balance submitted and the increased catchment area due to the hardstand being revised. In addition to the larger leachate dam, a secondary/pre-leachate pond of 1379 kL has also been developed for additional emergency storage. Total emergency storage is now 9571 kL (including the pre-leachate pond - 1379kL, 500mm freeboard of the leachate pond - 1192kL and additional emergency storage dam - 7000kL) A revised water balance was submitted as part of the

works approval compliance documentation confirming the new leachate pond design and additional emergency storage should be adequate to deal with normal operation of the site as well as up to (and including) and one in ten year frequency 72 hour rainfall event.

The area directly to the east of the leachate pond (Figure 2) intended for storage of the manures includes bunding and a hardstand engineered from low permeability clay sourced from the immediate area and compacted in accordance with WQPN 27. The in-situ clay is able to achieve a permeability of less than $1x10^{-9}$m/s. An averaged clay sample tested by SGS Australia Pty Ltd for an accredited permeability test revealed the coefficient of permeability (Ks) equated to be $1x1.4^{-10}$ m/s at 20°C.

Operation (Licence L8504/2010/1)

At full production of 20,000 tonnes per year, 3,000 tonnes of cereal straw or equivalent will be utilized annually and up to 1,000 tonnes will be stored on site. Varying amounts up to the following quantities are anticipated to be used annually:

- Abattoir waste (paunch contents): 1,500 tonnes
- Animal excreta (manure): 1,000 tonnes
- Wheat/Barley seconds: 1,000 tonnes
- Grain dust (inc. canola): 500 tonnes
- Spoiled grain: 500 tonnes
- Hay and straw: Availability dependant
- Green waste: Availability dependant

The manure will include pig manure from the Shark Lake piggery, chicken manure from Serpentine, sheep manure and cattle manure from the Shark Lake Abattoir, and sheep and cattle manure from the Esperance truck wash bay. Abattoir waste will include paunch material from the Shark Lake Abattoir. In the case of any other wastes (e.g. blood) proposed to be incorporated into the composting process in the future, a works approval and/or licence amendment application will be required by DER.

PAUNCH

Paunch material from the abattoir is a dry spadeable product. In the licence application and DER assessment "paunch" does not refer to the intestines of the animal itself but rather the contents which are essentially digested grass and other organic matter. Paunch material does not contain any meat products or large products not able to be easily mixed into the composting process. The processing of paunch material at the Shark Lake Abattoir results in a dry product, and it is not considered paunch material could be classified as a controlled waste

The spadeable paunch material will be transported to site in an enclosed truck whenever the product is required and available and loaded into a stockpile on the hardstand for immediate incorporation into the windrows by a loader. The frequency and time taken to incorporate the waste will depend on the C:N ratio in the material as to the requirements of the windrows. (The ingredients, moisture and temperature in windrows are controlled very closely to maximize the efficiency of process and quality of the product. Therefore the product would not be instantly piled into one windrow but would rather be spread among a number of windrows depending on requirements). The process could take a number of hours to complete.

The significance of odour from the paunch material will depend on the time the material has been sitting at the abattoir before being transported to Karingal. Humifert will not accept any

paunch which has been waiting to long at the abattoir and has gone putrid. Humifert is intending to produce a very high quality compost product primarily for personal use, with the intention of selling surplus if it becomes available.

MANURE

It is likely that up to 200 tonnes of pig manure/straw mixture and 200 tonnes of straight pig manure will be on site from time to time. 50 tonnes of chicken manure will be on site most of the time. Other manures will be brought to site on an as required basis.

BIOSOLIDS

In the future if bio-solids become available within the Esperance Shire (from the Esperance Wastewater Treatment Plant), Humifert may use them as a source of nitrogen in the composting process. Biosolids will be in a dry-spadeable form before acceptance such that they are not a controlled waste. Biosolids will be unloaded straight into the bunded areas of the hardstand and managed according to the "Western Australian Guidelines for Biosolids Management" 2012. The biosolids received will be tested for pathogens and contaminants at the end of processing. The humified composting process is illustrated in Figure 3 below.

The use of biosolids in the process is likely to require a separate approval from the Department of Health (WA).

COMPOSTING GENERAL

The maximum number of windrows the hardstand will hold at full production is 64. Each windrow is 3.5 meters wide and there is 3.5 meter spacing between each row. This will enable 20,000 tons of compost to be produced per annum on a 10 week cycle. The compost produced will be for personal use; however surplus compost will be sold when it becomes available and cash-flow dictates.

The product is produced according to a recipe where the C:N ratio is a measured calculation along with porosity ratings for the different feedstocks. The compost product is produced under strict aerobic conditions which are regularly monitored and recorded. The temperatures and times at those temperatures are recorded so correct management can occur to eliminate pathogens and weed seeds. The compost must achieve 65 Degrees Celsius for a minimum of 15 days and be turned 5 times in this period. If this is not achieved then the windrow is dismantled and reused as unfinished compost in a new windrow. The reason for the lack of temperature is also ascertained. High temperatures sustained for this period of time kill any pathogens that may be present. The finished product is tested by an accredited laboratory for the presence of human pathogens

The windrows are placed in a North West-South East direction on the hardstand to maximize water movement directly off the area to minimise water running through the base of the windrow. "Best practice" strategies, as outlined in the Victorian Guidelines for composting, will be adhered to. The finished product will be tested on an annual basis or when there is a change in the base recipe; for heavy metals, human pathogens, chemical contaminants, sulfides, salts, and mineral levels.

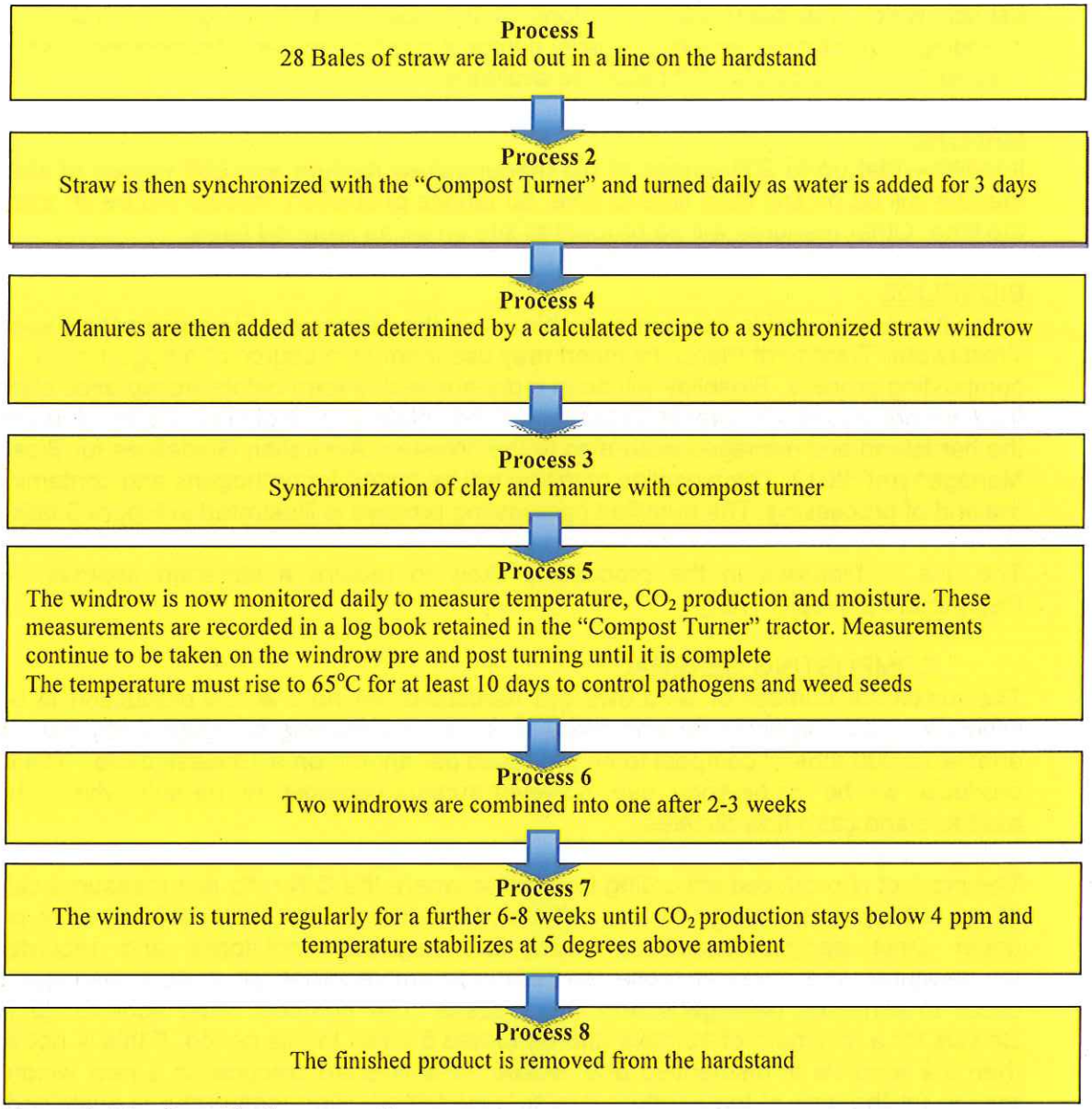


Figure 3: The 'humified' composting process

1.4 REGULATORY CONTEXT

1.4.1 Part V Environmental Protection Act 1986, Environmental Management

The current proposal required a Works Approval for construction of the hardstand, bunded feedstock storage area and leachate pond expansion which was granted on 10th June 2010 (W4678/2010/1). Works approval compliance certificate and documentation was received by DER from 30 August 2013 through to 23 September 2013. There was some variation in the construction to what had been originally proposed; however through correspondence during this period Humifert were able to adequately justify the changes which had occurred.

Relevant guidelines which may apply include:

- *"Environmental Guidelines for Composting and other Organic Recycling Facilities"*, Environmental Protection Authority, Victoria 1996;
- *"WPQN 27: Liners for containing pollutants, using engineered soils"*, Department of Water, 2006;

- *"Assessing storage and reliability of farm dams"* Department of Agriculture and Food WA, 2003.
- "*Western Australian guidelines for biosolids management*" Department of Environment and Conservation 2012

1.4.2 Other DMA's Legislation which applies

Health Act 1911 and subsidiary regulations, as administered by the Department of Health (WA) is relevant as approval from Department of Health is likely to be required for the use of biosolids in the composting process.

1.4.3 Local Government Authority

Meetings were held with the Esperance Shire Council at the works approval stage to notify them of the proposal to produce 'humified' compost on the Scaddan property, which is zoned rural. Due to the sites zoning and distance from other industry no planning issues or objections were raised.

2.0 STAKEHOLDER AND COMMUNITY CONSULTATION

SUBMISSIONS RECEIVED DURING 21 DAY PUBLIC COMMENT PERIOD

Works Approval W4678/2010/1

The Application for Works Approval details for this project were advertised in the West Australian newspaper on 10 May 2010 as a means of advising stakeholders and to seek public comments. No submissions were received.

Licence L8504/2010/1

The Application for Licence details for this facility was advertised in the West Australian newspaper on 3rd January 2011 as a means of advising stakeholders and to seek public comments. Stakeholder letters were sent directly to the Shire of Esperance and Department of Health. A submission was received from the Department of Health advising that Humifert Pty Ltd would require approval to use biosolids in the composting process and this advice was passed on to the applicant.

3.0 EMISSIONS AND DISCHARGES RISK ASSESSMENT

The DER considers that conditions should focus on regulating emissions and discharges of significance. Where appropriate, emissions and discharges which are not significant should be managed and regulated by other legislative tools or management mechanisms.

The following section assesses the environmental risk of potential emissions from the Karingal Pastoral Company. In order to determine the site's appropriate environmental regulation, an emissions and discharges risk assessment was conducted of the Karingal Pastoral Company using the environmental risk matrix outlined in Appendix B. The results of this are summarised in Table 2.

Table 2: Risk assessment and regulatory response summary table.

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DER Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
Air emissions (point source)	n/a. There are no point source air emissions from the premises.	n/a	n/a	WA – none. LIC – none.	n/a n/a	
Dust emissions	*Construction* 1 – Possibility of dust emissions from machinery during earthworks in construction phase. Upon site visit it was determined that significant dust would be unlikely from the ground material on site. *Operation* 1 - Dust emissions unlikely to be significant due to moisture levels in compost and nature of hardstand surface; however the use of canola dust and other fine products such as spoilt grain may generate some dust when initially incorporated. The applicant has committed in proposal document to strategic positioning of hay bales as wind barriers, and is exploring other options such as wind cloth	No – No community interest in this risk. Property is 1231m from nearest residence.	E – No regulation, other management mechanisms **Note: Conditions will be added to ensure current management measures which reduce these risks are implemented.**	WA – none. LIC – Conditions: • Standard condition for managing dust within premises boundary	n/a n/a	Environmental Protection (Unauthorised Discharges) Regulations *2004* *Environmental Guidelines for Composting and other Organic Recycling Facilities* 1996 (VIC Gov't)
Odour emissions	*Construction* n/a. There is no potential for odour during construction. *Operation* 4 – Odour emissions likely during operation due to processing of manure, paunch contents and storage of manures. Odour assumed as moderate under normal conditions and significant for worse-case scenario; thus having overall significance of 4. The licensee will consider the installation of an aerator in the leachate pond to improve water quality and inherently improve odour, as detailed in the original works approval application.	No – Community consultation is positive and indicates little concern about odour. Nearest resident 1231m from facility and has endorsed the proposal. VIC Guidelines recommend 1750m buffer. Meteorological statistics indicate predominant wind directions will not affect near neighbour.	C – licence condition (setting targets + EMP's longer timeframes)	WA– none. LIC– Conditions: • Complaint records and reporting system • Covering of stored manure (lime, green waste or other effective materials) • Standard odour conditions	n/a **Appendix A 1.1**	Environmental Guidelines for Composting and other Organic Recycling Facilities (VIC Gov't,)
Noise emissions	*Construction* 1 - Possible noise emissions during earthworks/construction phase; however not expected to be significant or exceed EP Noise regs.	No - No community interest in this risk. Property is 1231m from nearest residence.	E – No regulation, other management mechanisms	WA- none. LIC– none.	n/a n/a	Environmental Protection (Noise) Regulations 1997 Environmental Guidelines for Composting and other Organic Recycling Facilities

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DER Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
	Operation 1 – Possible noise emissions from on-site vehicle traffic and composting operations; however unlikely to be significant and not expected to exceed EP noise regs.					(VIC Gov't)
Light emissions	n/a. There are no light emissions from the premises as there is minimal night-work.	n/a	n/a	WA– none. LIC– none.	n/a n/a	General provisions of the *Environmental Protection Act 1986*
Discharges to water	*Construction* 1 – Construction activities will not result in any direct discharges to water. *Operation* 1 – Direct discharges to water will not occur during normal operations. No waterways on site. Contamination of groundwater with leachate is unlikely given the natural deep impermeable clay layer on site which will be capped by 100mm compacted dolimitic rock and a 10 mm water bound clay/granite grit road base, and a leachate drainage system and pond which is capped with impermeable compacted clay. Clay will achieve a permeability of $1.4x10^{-10}$m/s which is lower than permeability guideline (WQPN 27) of 1×10^{-9}m/s. Three groundwater Monitoring bores were installed during the construction period (1 control bore and 2 impact bores); however only the shallower impact bores encountered water. The licensee committed to installing an additional bore as a control if the existing control bore does not encounter water within the first 12 months of operation.	No - No community interest in groundwater risk. Property is 1231m from nearest residence, and it is well known that groundwater in the area is saline and slightly acidic and is thus not useful to landowners.	E – No regulation, other management mechanisms **Note: Conditions will be added to ensure current management measures which reduce these risks are implemented.**	WA – Conditions: • Construct hardstand, drainage and feedstock storage areas with permeability of less than 10^{-9}m/second or less in accordance with proposal document. • Baseline groundwater modelling LIC – Conditions: • Annual monitoring of groundwater at control and impact locations as set in proposal document in accordance with Australian standards and to be submitted to NATA accredited laboratory. • Reporting of monitoring results in AER • Installation of a new control bore, if water is not encountered in the current control bore within 12 months of the licence being issued	Appendix A 1.2 Appendix A 1.2	Environmental Protection (Unauthorised Discharges) Regulations *2004* Environmental Guidelines for Composting and other Organic Recycling Facilities (VIC Gov't) "WPQN 27: Liners for containing pollutants, using engineered soils", Department of Water, 2006
Discharges to land	*Construction* n/a. Construction activities will not result in any discharges to land. *Operation* 1 – Discharge to land should not occur as part of normal operation, given adequate impermeability of the hardstand on which all composting activities occur, the separation	No - No community interest in groundwater risk. Property is 1231m from nearest residence.	E – No regulation, other management mechanisms **Note: Conditions will be added to ensure**	WA – Condition: • Construct hardstand, drainage and feedstock storage areas with permeability of less than 10^{-9}m/second or less in accordance with proposal document LIC – Conditions: • Composting hardstand and storage areas to drain to leachate pond	Appendix A 1.3 Appendix A 1.3	Environmental Protection (Unauthorised Discharges) Regulations *2004* Environmental Guidelines for Composting and other Organic Recycling Facilities (VIC Gov't)

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DER Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
	of clean stormwater and leachate drainage systems. Size of the leachate pond and additional emergency storage is adequate for ongoing operation and to handle a one-in-ten 72 hour rainfall event. Contingency strategies are in place in case of even more severe weather event (pump and additional emergency storage) however the need for this dam is extremely unlikely given the water balance submitted for the leachate dam.		**current management measures which reduce these risks are implemented.**	• Maintenance of freeboard on leachate pond & emergency storage of 500mm. • Installation of freeboard markers • Uncontaminated stormwater not to enter leachate pond • Vegetation not to encroach on leachate pond inner embankments • Separation of clean and contaminated stormwater • Notification of any environmental incidents		
Solid / liquid wastes	*Construction* n/a. Construction of the facility will not result in waste. *Operation* 4 – The composting process itself will not result in waste; however there will be some storage of waste on site intended for incorporation into the composting process. Waste stored on site will include some pig and chicken manure and some dried, spadeable biosolids (not controlled waste); however this will be stored in an area bunded with compacted clay with an adequate permeability to prevent contamination of stormwater and groundwater. Abattoir waste will be brought to site on an as-required basis and will not be stored. Any stored manure will be covered with a layer of hay to minimise odour.	No - No community interest in groundwater risk. Property is 1231m from nearest residence.	C – licence condition (setting targets + EMP's longer timeframes)	WA – Condition: • Construct feedstock storage areas with permeability of less than 1 by 10^{-9}m/second or less in accordance with proposal document.	n/a	Environmental Protection (Controlled Waste) Regulations 2004 Environmental Guidelines for Composting and other Organic Recycling Facilities (VIC Gov't) "WPQN 27: Liners for containing pollutants, using engineered soils", Department of Water, 2006 "Western Australian Guidelines for Biosolids Management" (DEC 2012)
				LIC – Conditions: • The facility shall receive only pig, chicken, cow and sheep manure and paunch material as nitrogen sources for the composting process. The facility can also utilise wheat/barley seconds, canola and other grain dust, spoiled grain, hay/straw and green waste as proposed in their works approval application. Volumes to be recorded & reported. • Approval for the use of biosolids is pending approval from DoH being obtained. • Paunch material shall not be stored on site and is delivered as required. • Paunch material must be speadeable • Nitrogen feedstock shall be stored on the bunded hardstand • Biosolids to be managed according to the Biosolids guidelines and any DoH requirements • Composting to be undertaken on hardstand • Regular monitoring of temperature and moisture to be undertaken to ensure pathogens are killed • Compost production to be <20000tpa as per works approval commitments • Reporting of all monitoring in AER	n/a	

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DER Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
Hydrocarbon/ chemical storage	n/a. There are no dangerous goods stored on site as part of the proposal.	n/a	**Note: Conditions will be added to address any potential future storage on site.**	WA – none.	n/a	Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007
				LIC – Conditions: • Standard condition requiring immediate cleanup of spilt material.	n/a	
Native vegetation clearing	n/a. There is no clearing of vegetation required.	n/a	n/a	WA – none.	n/a	
				LIC – none.	n/a	
Contaminated site identification	n/a. The premises is unlikely to become contaminated providing environmental management measures are adhered to.	n/a	n/a	WA – none.	n/a	Contaminated Sites Branch (DER) and **Contaminated Sites Act 2003**
				LIC - none.	n/a	

4.0 GENERAL SUMMARY AND COMMENTS

This assessment focuses on the environmental risks and impacts of both the construction (Works Approval) and operations (Licence) of Karingal Pastoral Company in Scaddan, WA. The construction included the installation of a hardstand for composting activities 9.46ha in area, a bunded storage area for manure, separate stormwater and leachate drainage systems and the expansion of an existing dam on site to function as the leachate collection dam, as well as additional emergency leachate storage.

Works Approval

There were few discharges and emissions of significance for the site. There were no planned or direct discharges to land or water. Providing the facility was constructed in accordance with the proposal document, that is, adequate permeability was achieved for the hardstand, feedstock storage area and leachate drains and dam, and the leachate pond was constructed to a size which can cope with the potential volumes of leachate, there would not be any unplanned discharges. The works approval was issued on 10/6/2010 with conditions to construct in accordance with the application, monitor and submit baseline information in 3 groundwater bores and submit a compliance document for the site. This ensured that the hardstand, drainage and feedstock storage areas were completed with adequate permeability which is the most significant issue for the works approval.

Licence

During operations there will be some (limited) potential for environmental impact regarding dust, odour, groundwater contamination, discharges to land (via inadequate surface water management and/or storage of compost and feedstock). Notwithstanding this, the proposed management of these risks by Humifert Pty Ltd is appropriate and should sufficiently minimise impacts. Conditions have been added onto the licence largely mirroring the commitments made by Humifert Pty Ltd in their original application documentation to DER.

Overall, the Humified Compost Production activities by Humifert has a low risk rating, thus it is recommended that the licence be issued for a period of five years. The application suggests that the occupier is well-educated on the production process as well as how to manage environmental risks. The nearest neighbour is over 1km from the property and thus risk of complaints is low.

OFFICER PREPARING REPORT

Cassie Bell

Position: Environmental Officer
South Coast Regional office
Department of Environment Regulation
9842 4566

December 2010 (works approval)
Amended September 2013

ENDORSEMENT

Caron Goodbourn

Position: Regional Leader
South Coast Regional office
Department of Environment Regulation
9842 4568

September 2013

APPENDIX A: EMISSIONS AND DISCHARGES OF SIGNIFICANCE

1.1 ODOUR EMISSIONS

Source and nature

There are no potential odour emissions from the construction of the facility; however during operation continuous odour may be generated from the storage of nitrogen feedstocks (particularly pig and chicken manure planned to be stored on site most of the time) and the leachate pond. Some odour could also be generated periodically with the turning of windrows, as the composting process will incorporate a number of offensive wastes such as biosolids, manure and paunch from the abattoir.

Management measures

The Karingal premises has a buffer of 1231m from the nearest neighbour, whom Humifert has consulted with and they have not expressed any concerns about the potential for odour. Additionally the prevailing wind directions indicate that this neighbour should not be significantly affected based on their orientation from the composting location. The next closest neighbour is around 5 km away and thus is not expected to be impacted.

Nevertheless Humifert Pty Ltd is proposing to manage odour through the following measures during operation:

- the covering and mixing of nitrogen feedstocks (chicken and pig manure) with straw while being stored;
- the delivery of abattoir waste (paunch) on an as-required basis for immediate incorporation to ensure that the material is not stored on site; and
- installation of an aerator in the leachate pond to address oxygen demand if required, and therefore prevent odour-causing decay of organisms.

ODOUR EMISSIONS RISK ASSESSMENT

It was assumed that odour would be moderate under normal operating conditions, and significant under worse-case scenario conditions, thus the significance of odour was rated as **4**. The socio-political context of the emissions was assessed at **No**, due to the distance from the nearest neighbour who has endorsed the proposal and should not be significantly impacted based on prevailing wind characteristics.

The overall priority descriptor for odour was therefore **C – licence condition (setting targets + EMP's longer timeframes)**.

RECOMMENDED STRATEGY FOR MANAGING ODOUR EMISSIONS

The issue of odour emissions is suitable for licence condition (but not conditions on the works approval). It is recommended that conditions be included on the operating licence as listed in Table 2 of this report, to the effect of requiring complaint reporting, the covering of stored nitrogen feedstocks and the delivery of abattoir waste to the site on an as-required basis only.

1.2 DISCHARGES TO WATER

Source and Nature

Discharges to water are unlikely during both the construction of the facility and during operation; however there could be some risk of groundwater contamination from compost, leachate and/or stored feedstocks if the hardstand areas, drainage lines and leachate pond are not lined properly. If groundwater contamination were to occur, it is likely that this would be evidenced by increased nutrients, pathogens, BOD and potentially a shift in pH.

It should also be noted that the groundwater underneath the Karingal site is classified as an "internal system" and is of poor quality and therefore has no end use.

Management Measures

Humifert are proposing to construct the hardstand, drainage lines and leachate pond over a natural impervious clay layer which sits above the water table, as well as adding a layer of dolomitic rock, and a layer of road base on top of this. Permeability tests on the natural clay layer indicate that the clay conforms with DoW WQPN 27 in that it achieves a permeability of much less than 10^{-9}m/sec, and is much thicker than 300mm.

Additionally, Humifert are proposing the installation of a control monitoring bore (south of the hardstand which slopes from SE to NW) and two impact bores (NW of the hardstand and leachate pond) to be monitored periodically to ensure that contamination is not occurring.

DISCHARGES TO WATER RISK ASSESSMENT

The significance of discharges was rated at **1** for both construction and operation of the facility given the fact that discharges to water should not occur if the proposal is followed as planned. Socio-political context was assessed as **No** given the distance to nearest neighbour and lack of community interest in this risk.

Overall priority descriptor for this risk was therefore determined to be **E – No regulation, other management mechanisms**.

RECOMMENDED STRATEGY FOR MANAGING DISCHARGES TO WATER

The issue of water discharges does not require regulation according to the risk matrix in Appendix B due to sufficient management measures already in place; however it is recommended that licence conditions be used to ensure that management measures are adhered to regardless. A condition was included on the works approval for construction to follow the original proposal document, ensuring the hardstand/leachate drainage system are lined adequately. It is recommended that conditions be included on the licence to ensure that the licensee carries out monitoring of the bores for relevant parameters.

1.3 DISCHARGES TO LAND

Source and Nature

Discharges to Land are not likely during construction; however there is some risk of discharges occurring during operation due to the contamination of soil, or contamination of stormwater gaining access to surrounding soils, by leachate, nitrogen feedstocks and unfinished compost material. Additionally a discharge to land could occur if the leachate pond were to overtop during an extreme rainfall event or if the pond volume was inadequate.

Management Measures

Humifert have proposed to manage the risk of discharge to land through the following measures:

- Construction of hardstand, manure storage area and leachate pond over an impervious natural clay layer (see Appendix A, 1.2)
- Storage of nitrogen feedstocks on manure storage area only, which is adequately bunded and sloped so that leachate will not escape into the surrounding environment
- Installation of leachate drainage system from hardstand and manure storage area to leachate pond
- Construction of an adequately sized leachate pond to cope with leachate levels during normal operation, as well as a freeboard to cope with an extreme rainfall event.
- Contingency strategy in place for unusual situation overtopping of ponds is likely, including available pumps in place to direct excess water from the main leachate pond to another dam west of the hardstand.

DISCHARGES TO LAND RISK ASSESSMENT

Discharges to land for both construction and operation were given a significance of **1** as discharges to land are not proposed and are very unlikely due to the design of the facility. Socio-political context of discharges to land was assessed as **No** due to distance to nearest neighbour and lack of concerns raised over the risk.

The overall priority risk descriptor was therefore assessed as **E – No regulation, other management mechanisms.**

RECOMMENDED STRATEGY FOR MANAGING DISCHARGES TO LAND

The issue of land discharges does not require regulation according to the risk matrix in Appendix B due to sufficient management measures already in place; however it is recommended that licence conditions be used to ensure that management measures are adhered to regardless. A condition was included on the works approval for the construction to follow the original proposal document, ensuring the hardstand/leachate drainage system are lined and bunded adequately.

It is recommended that conditions be included on the licence to ensure that the licensee separates clean stormwater from contaminated leachate, stores nitrogen feedstocks on the manure hardstand area, directs leachate to the leachate pond for evaporation or reuse, and manages the ponds adequately to ensure no leakage or overtopping occurs.

APPENDIX B: EMISSIONS AND DISCHARGES RISK ASSESSMENT MATRIX

Table 3: Measures of Significance of Emissions

Emissions as a percentage of the relevant emission or ambient standard		Worst Case Operating Conditions (95th Percentile)			
		>100%	50 – 100%	20 – 50%	<20%*
Normal Operating Conditions (50th Percentile)	>100%	5	N/A	N/A	N/A
	50 – 100%	4	3	N/A	N/A
	20 – 50%	4	3	2	N/A
	<20%*	3	3	2	1

*For reliable technology, this figure could increase to 30%

Table 4: Socio-Political Context of Each Regulated Emission

		Relative proximity of the interested party with regards to the emission				
		Immediately Adjacent	Adjacent	Nearby	Distant	Isolated
Level of Community Interest or Concern*	5	High	High	Medium High	Medium	Low
	4	High	High	Medium High	Medium	Low
	3	Medium High	Medium High	Medium	Low	No
	2	Low	Low	Low	Low	No
	1	No	No	No	No	No

Note: These examples are not exclusive and professional judgement is needed to evaluate each specific case
*This is determined by DER using the DER "Officer's Guide to Emissions and Discharges Risk Assessment" May 2006.

Table 5: Emissions Risk Reduction Matrix

		Significance of Emissions				
		5	4	3	2	1
Socio-Political Context	High	A	A	B	C	D
	Medium High	A	A	B	C	D
	Medium	A	B	B	D	E
	Low	A	B	C	D	E
	No	B	C	D	E	E

PRIORITY MATRIX ACTION DESCRIPTORS
A = Do not allow (fix)
B = licence condition (setting limits + EMPs - short timeframes)(setting targets optional)
C = licence condition (setting targets + EMPs - longer timeframes)
D= EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools
E = No regulation, other management mechanisms

Note: The above matrix is taken from the DER Officer's Guide to Emissions and Discharges Risk Assessment May 2006.