



## Review of Existing Premises

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

**Applicant:** A. Richards Pty Ltd

**ACN:** 008 734 852

**Licence Number:** L7308/1998/13

**File Number:** 2010/008321

**Premises:** Richgro Garden Products  
203 Acourt Road  
JANDAKOT WA 6164

Lot 186 on deposited Plan 109038  
Certificate of Title Volume 1645 Folio 965

Bound by the coordinates –

<i>Position No.</i>	<i>Latitude</i>	<i>Longitude</i>
A	32° 06' 12.07" S	115° 53' 59.81" E
B	32° 06' 15.66" S	115° 53' 56.27" E
C	32° 06' 14.98" S	115° 53' 55.29" E
D	32° 06' 17.19" S	115° 53' 51.21" E
E	32° 06' 17.99" S	115° 53' 54.52" E
F	32° 06' 25.10" S	115° 53' 48.82" E
G	32° 06' 15.78" S	115° 53' 32.81" E
H	32° 06' 03.71" S	115° 53' 43.14" E

**Date of report:** Monday, 12 February 2018

**Status of Report** Final

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## Definitions of terms and acronyms

Term	Definition
AACR	Annual Audit Compliance Report
AD	means Anaerobic Digestion
AER	Annual Environment Report
AS 4454	Australian Standard AS 4454: Compost, soil conditioners and mulches.
AS 5667.1	Australian Standard AS 5667.1: Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples.
AS 5667.10	Australian Standard AS 5667.10: Water Quality – Sampling – Guidance on sampling of waste waters.
AS 5667.11	Australian Standard AS 5667.11: Water Quality – Sampling – Guidance on sampling of groundwaters.
Category/Categories (Cat.)	categories of prescribed premises as set out in Schedule 1 of the EP Regulations
Compost Batch	means a full Compost Cycle undertaken for one windrow.
Compost Cycle	means the composting process involving the acceptance of green waste into the Composting Shed and the initial mixing and pasteurisation phases undertaken to reach compost stability, prior to removal outside.
Controlled Waste	Means any matter that is – a) within the definition of waste in the NEPM for the <i>Movement of Controlled Waste between States and Territories</i> ; and b) listed in Schedule 1 of the <i>Environmental Protection (Controlled Waste) Regulations 2004</i> .
Decision Report	this document
Delegated Officer	An officer under section 20 of the EP Act.
DER	means the former Department of Environment Regulation
Digestate	means the liquid waste produced from the biodegradation of feedstock within an Anaerobic Digestion plant
DWER	Department of Water and Environmental Regulation
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>

Licence Holder	A. Richards Pty Ltd
m <sup>3</sup>	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
NEPM	National Environmental Protection Measure
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	is defined in the EP Act to mean a person who is in occupation or control of a premises, or part of a premises, whether or not that person is the owner of the premises or part of the premises.
Premises	Richgro Garden Products
Prescribed Premises	Premises prescribed under Schedule 1 to the EP Regulations
UDR	<i>Environmental Protection (Unauthorised Discharge) Regulations 2004 (WA)</i>

## 1. Purpose and scope of assessment

On 5 October 2016, the **Licence Holder** was notified that the **CEO** of the former **DER** (now DWER and hereafter referred to as DWER or the Department) determined that a risk based licence review (Review) of Licence L7308/1998/13 held under Part V of the Environmental Protection Act 1986 (EP Act) by A. Richards Pty Ltd (**Licence Holder**) for the composting facility on Lot 186 on Plan 109038 Acourt Road (**Premises**) was required.

Following a review of odour complaints in the area, the Department identified that the **Premises** could be a source of odours in the area. A review of the Annual Environmental Reports (AER) for the **Premises** in March 2015 and 2016 also identified rising nutrient concentrations in groundwater which could be arising from the **Premises**.

This Review is documented through this Decision Report.

This Review has been undertaken in accordance with the regulatory risk-based framework published by the former DER, including *Guidance Statement: Decision Making* and *Guidance Statement: Risk Assessments*.

## 2. Background

Table 1 details the Prescribed Premises Categories that are held by the **Licence Holder** for the **Premises**.

**Table 1: Prescribed Premises Categories**

Classification of Premises	Description	Prescribed premises threshold	Approved production or design capacity
Category 61	Liquid waste facility: premises on which liquid waste produced on other premises (other than sewage waste) is stored, reprocessed, treated or irrigated.	100 tonnes or more per year	25,000 tonnes per year
Category 61A	Solid waste facility: premises (other than premises within category 67A) on which solid waste produced on other premises is stored, reprocessed, treated, or discharged onto land.	1,000 tonnes or more per year	75,000 tonnes per year
Category 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	50,000 tonnes per year

### Related activities

The premises bags composted and fertiliser product for the retail market. The bagging station is considered a directly related activity as it gives rises to emissions and discharges such as dust, noise and odour and in accordance with *Guidance Statement: Risk Assessments* (February 2017), the **Delegated Officer** has identified and assessed the acceptability of the likely emissions arising from these types of activities as part of the risk assessment process.



The bagging station consists of two enclosed bagging plants with concrete hardstands: one for fertilisers and the other for soil products. Bagging station activities involve the loading of products into a hopper and conveyor system where plastic packaging is applied and loaded into pallets for offsite sale. The fertiliser plant has the hopper located inside the building however the soils plant has an outside hopper. The bagging station has ventilation and the loaders are fitted with low tonal reversing beepers. There are no specific noise controls in place. Each bagging plant is fitted with a dust extraction unit.

The biogas electricity generators and bypass flare are considered to be activities that are directly related to the anaerobic digestion plant and also give rise to emissions and discharges. The generators are likely to give rise to emissions of heat, gas and noise. The flare gives rise to emissions of heat and gas.

The **Delegated Officer** has identified that Activated Carbon Technologies Pty Ltd (Activated Carbon) lease a portion of Lot 203 from the **Licence Holder**. The activities associated with Activated Carbon do not meet the definition of a prescribed premises and are therefore not regulated under Part V of the **EP Act** as part of Richgro's prescribed premises boundary. These activities are not related in any way to the prescribed premises activities and are therefore not considered to be directly related activities. As such activities relating to Activated Carbon have not been considered in this Review.

Similarly, the polytunnels and blueberry cultivation on the premises is not directly related to the prescribed premises activities and have not been considered in this Review.

### 3. Overview of Richgro Garden Products premises

#### 3.1 Infrastructure

The composting facility infrastructure, as it relates to activities for categories 61, 61A and 67A, is detailed in Table 2 and with reference to the Premises Map (Attachment 1).

**Table 2: Composting facility category 61, 61A and 67A infrastructure**

Infrastructure	
Prescribed Activity Infrastructure Category 61, 61A and Category 67A	
1	Asphalt hardstand with a surface area of approximately 71,945m <sup>2</sup> Hardstand consists of 40mm of asphalt underlain by 400mm limestone and road base and is designed with a 1 in 100 fall to leachate ponds ('Asphalt Hardstand' in Attachment 1).
2	Limestone hardstand 105m x 65m (approximately 6,825m <sup>2</sup> ), 500mm thickness designed with a 1 in 100 fall to leachate ponds ('Limestone Hardstand' in Attachment 1).
3	Ponds: Four 1.5mm HDPE lined ponds for the collection of leachates and storm water: <ul style="list-style-type: none"> <li>• 45m x 40m x 4m ('Pond 1' in Attachment 1);</li> <li>• 65m x 40m x 4m ('Pond 2' in Attachment 1);</li> <li>• 100m x 40m x 4m ('Pond 3' in Attachment 1); and</li> <li>• 150m x 40m x 4m ('Pond 4' in Attachment 1).</li> </ul>
4	Sumps <ul style="list-style-type: none"> <li>• One 4.5m x 15.5m with sediment trap (servicing Pond 3)</li> </ul>

Infrastructure	
	<ul style="list-style-type: none"> <li>Five 4.5m x 6m with sediment traps (Three servicing Pond 1, two servicing Pond 2)</li> </ul>
5	<p>Aerators:</p> <ul style="list-style-type: none"> <li>One subsurface diffuser aerator and snorkel system (Pond 1);</li> <li>One aerator pump fitted with four aeration units floating on pond surface (Pond 2);</li> <li>Two aerator pumps, each fitted with four aeration units floating on pond surface (Pond 3);</li> <li>Two aerator pumps, each fitted with four aeration units floating on pond surface (Pond 4)</li> </ul>
6	<p>Water treatment system consisting of:</p> <ul style="list-style-type: none"> <li>sand filtration;</li> <li>chlorine dosing and</li> <li>Pump system to direct treated pond water from Pond 3 to Pond 4;</li> </ul>
7	One windrow turner with hose attachment for application of water
8	<p>Green waste grinders:</p> <ul style="list-style-type: none"> <li>One slow speed grinder (up to 80m<sup>3</sup>/hour) without water sprays;</li> <li>One high speed grinder (up to 100m<sup>3</sup>/hour) with water sprays</li> </ul>
9	<p>Screeners:</p> <ul style="list-style-type: none"> <li>One screener (up to 120m<sup>3</sup>/hour) for damp compost stockpiles and products (no water sprays)</li> <li>One screener (up to 120m<sup>3</sup>/hour) for sands and dry products with water sprays</li> </ul>
10	HDPE Blue Line Poly pipe Irrigation ring main and piping system for sprinkler system (fixed and moveable)
11	Water truck with 12,000L capacity
12	<p>Receival Hall (in Attachment 1) operating under negative pressure and consisting of:</p> <ul style="list-style-type: none"> <li>Cool room paneling;</li> <li>Graded concrete flooring to drainage sump connected to mixing tank;</li> <li>Two automatic closing doors</li> <li>Integrated waste macerator, de-packager and separator connected to mixing tank;</li> <li>Mixing tank with 11m diameter connected to air extraction system;</li> <li>Four x 3-sided concrete loading bays for waste storage; and</li> <li>Air extraction system to biofilter.</li> </ul>
13	Liquid waste receival bay with below ground sump and drainage to mixing tank.
14	<p>Biofilter (in Attachment 1) for Receival Hall :</p> <ul style="list-style-type: none"> <li>20m x 10m;</li> <li>320m<sup>3</sup> spongelite (fossilised sea sponges compromised predominantly of silica) biofilter bed; and</li> </ul>

Infrastructure	
	<ul style="list-style-type: none"> <li>• 7m Stack</li> </ul>
15	<p>Two fully enclosed Anaerobic Digestion (AD) tanks (in Attachment 1) each with:</p> <ul style="list-style-type: none"> <li>• 18.7m diameter;</li> <li>• 500m<sup>3</sup> capacity for gas;</li> <li>• Double membrane biodomes;</li> <li>• Pressure detection system; and</li> <li>• Piping to flare and biogas generators.</li> </ul>
16	Dosing tank (in Attachment 1) with 11m diameter connected to air extraction system
17	Final tank (in Attachment 1) with 11m diameter.
18	Two enclosed gas flare to meet combustion temperature of around 850°C connected to AD tanks with combustion rate of up to 400m <sup>3</sup> /hour
19	Heat exchanger and associated pipework between the AD tanks and biogas generators
20	Two Electric biogas generators each with 1.2MW capacity and 8m stack
21	Bagging station consisting of hopper and conveyor system, asphalt floor within an enclosed building
22	<p>Composting shed operated under negative pressure with an air extraction system for odour management consisting of:</p> <ul style="list-style-type: none"> <li>• 4 concrete hollowed floored bays (6m wide, 72m long, 1.8m high with 150mm thick concrete walls)</li> <li>• 4,818m<sup>3</sup> capacity;</li> <li>• Aeration flooring (not in operation);</li> <li>• rapid open/close roller doors at the access points.</li> </ul>
23	<p>2 x Biofilter (in Attachment 1) for Composting shed consisting of:</p> <ul style="list-style-type: none"> <li>• 20m x 10m; and</li> <li>• 320m<sup>3</sup> spongelite (fossilised sea sponges compromised predominantly of silica) biofilter bed.</li> </ul>
24	Groundwater monitoring bores MB1, MB2, MB4, MB6, MB7 and MB11 (Attachment 2)

### 3.2 Operational aspects

The **Licence Holder** produces approximately 960 tonnes per week of compost, mulch and blended soils which are sold for commercial purposes.

**The Premises operates during the following hours:**

- 06:00 to 16:00 Monday to Friday,
- 06.00 to 16.00 Saturdays as required, with noise generating equipment not commencing until 07:00.
- The bagging station may run night shifts (16:00 to 02:00) as required to meet seasonal

commercial demands.

### 3.2.1 Acceptance of materials

The **Premises** accepts the wastes types shown in Table 3. The process which each waste type feeds is also shown in Table 3.

**Table 3: Wastes accepted at the Premises**

Waste type	Controlled Waste	Process on site
Green waste	No	Outdoor composting
Sawdust		
Pine bark		
Chicken, cow and sheep manure		
Grain wastes		
Solid food wastes		
Waste water from animal processing facilities	Yes	AD plant
Waste from grease traps limited to milk solids		
Liquid food and beverage processing wastes		

Incoming green waste is stored on the limestone hardstand where it is shredded and screened into smaller pieces to be used in the composting process.

Incoming sawdust and pine bark are stored on the asphalt hardstand.

Chicken manure is stored in an enclosed shed which is adjacent to the composting shed.

Liquid Controlled Wastes are discharged directly from the tanker into the mixing tank associated with the AD plant.

Solid food wastes and grains are unloaded and stored within concrete bays within the AD Receiving Hall.

Digestate produced from the AD plant was until 1st April 2017 being used as a source of moisture for the composting process. Since 1st April 2017, digestate has been removed off the **Premises** for disposal but consideration has been given through this licence review for digestate to be applied to green waste inside the composting shed with excess volumes removed offsite.

### 3.2.2 Process

#### Anaerobic Digestion plant

Liquid Controlled Wastes are received onsite and unloaded directly from the tanker to the open blending tank within the Receiving Hall which is under negative pressure. Solid food wastes, grains as well as packaged and tinned waste foods and packaged liquids are directed from the storage bays within the Receiving Hall to the food shredder where they are macerated and then directed to the blending tank.

Liquid and macerated solid waste combined within the blending tank are pumped into the digester feed tank/hydrolysis tank where the first phase of digestion occurs breaking down the food waste in preparation for the digester. This is then fed in even amounts into the two AD tanks. Within the AD tanks, wastes are broken down by micro-organisms in the absence of oxygen to produce biogas (predominantly methane and carbon dioxide) and digestate.

The biogas is directed to one of two generators where it is used as a fuel to generate

electricity. The electricity generated is used on the **Premises** with the surplus exported to the electricity grid.

The flare is used in the following situations:

- under emergency situations, when the biogas is unable to be directed to one of the two generators;
- during start-up and shut-down periods; or
- during routine maintenance (which may be up to 12 days per year).

### **Outdoor composting**

The **Licence Holder** produces three main streams of compost on site: a green waste compost, a pine bark compost and a finer sawdust based compost. The **Licence Holder** has advised that composts are produced in accordance with Australian Standard AS 4454-2012 Composts, soil conditioners and mulches. Composting of green waste, pine bark and sawdust is undertaken outside in uncovered windrows.

Green waste received on site is processed in grinders to produce mulch. This mulch then forms the basis of the green waste compost stream. Pine bark is shredded onsite. Sawdust does not receive any pre-treatment. The ground green waste and pine bark are mixed with a small amount of chicken manure and formed into separate windrows to reflect the different compost streams. Treated leachate pond water/stormwater is added to all three feedstocks for both moisture and nutrient content to achieve an initial moisture content of approximately 60%.

The windrows begin the composting process which involves the decomposition of organic material. During this stage, moisture is added to promote conditions suitable for decomposition of material by micro-organisms. Re-use leachate water from the leachate ponds is applied to the sawdust windrows. Until the 1st April 2017, the **Licence Holder** was applying digestate produced by the AD plant in lieu of treated leachate/stormwater, on the green waste and pine bark composting streams. The **Delegated Officer** understands that the pine bark compost stream received approximately 50% digestate and 50% treated leachate pond water/stormwater.

The temperature of the windrows is allowed to increase to 55°C for a period of at least three consecutive days to allow pasteurisation to occur. This is where plant propagules and pathogens are reduced.

After pasteurisation, the compost undergoes the maturation stage. During this stage, windrows are turned once or twice weekly, as required, by a windrow turner to promote aeration and assist in applying bore water into the windrows for moisture content. Moisture levels are maintained between 40 – 65% in line with AS 4554-12. Oxygen levels, temperature and moisture content are monitored weekly.

The **Licence Holder** has confirmed that only potable bore water is used in the composting process post pasteurisation. Products that are composted to attain AS 4554-12 accreditation are externally audited under the Australian Standards.

Blended soils are produced on the asphalt hardstand. The blended soils are comprised of the feedstocks, final products and additional soils stored onsite, depending on what product is being produced. The **Licence Holder** has advised the **Delegated Officer** that blended soils are undertaken in accordance with AS 4554-12. Final products are bagged onsite in the bagging station and stored outside on pallets or within a storage warehouse prior to being sold onto wholesale clients.

### **Indoor composting**

As part of this Licence Review, the **Delegated Officer** has considered the risks posed by the indoor composting of green waste blended with digestate, and has determined that this can be

suitably undertaken within the existing Composting Shed fitted with biofilters. As part of the comment period on the draft decision report and licence conditions, the Licence Holder provided the document *Standard Operating Procedures, SOP3A.03, Composting Processes – Digestate (SOP3A.03)* which the **Delegated Officer** has considered as part of this review.

### 3.2.3 Composting hardstand

All outdoor composting occurs on an asphalt hardstand.

The **Delegated Officer** is not aware of any testing to confirm the integrity of the hardstand. Site inspections carried out by Department officers, the most recent being in January 2017, did not identify any cracks in the hardstand, however a pot hole was identified which may compromise the integrity of the hardstand.

### 3.2.4 Leachate ponds

Three ponds capture storm water and run-off from the asphalt and limestone hardstands.

The asphalt hardstand is graded to a fall of 1 in 100 to drain to leachate Ponds 1, 2 and the Main Pond. The limestone hardstand used for the storage and processing of green waste is graded to drain to leachate Ponds 1 and 2.

Water from Pond 1 is directed into Pond 2 when it reaches the level of the overflow pipe, otherwise it can be manually pumped as required using an existing pump system onsite. Water from Pond 2 is manually pumped to Pond 3 where it is then directed through a sand filtration system to assist in removing the solid components, dosed with chlorine, and pumped into Pond 4 where water is extracted for use in the composting process.

Pond 4 only receives treated water or storm water. Ponds 1, 2 and 3 have sediment sumps to assist in reducing solid matter from entering the ponds. Each pond has aerators which are operated continually.

All ponds have been constructed to be lined with 1.5mm HDPE liner and underlain by in-situ soils. Groundwater monitoring data (refer to section 4.3.3 and Appendix 4) indicates that the base of the ponds are likely to be below the groundwater table during winter.

The **Licence Holder** committed to undertaking a survey of all ponds by November 2017. To date, the results have not been provided to DWER.

### 3.2.5 Bagging station

The bagging station is located between the composting shed and storage warehouse as depicted in Attachment 1 and bags composts, mulches, blended soils, fertilisers and manures for sale offsite. The activities are undertaken inside two enclosed warehouses with hopper and conveyor systems to transport products through the bagging station. The facility is situated on a concrete hardstand. No noise management infrastructure has been constructed in this area. Each bagging plant is fitted with a dust extraction unit however this does not treat the air for odour.

The **Licence Holder** has advised that bagging station operations may extend until 2am to meet market demand when required.

## 4. Legislative context

### 4.1 Other relevant approvals

#### 4.1.1 Planning approvals

The **Premises** is located within the City of Cockburn (the City) and has planning approval for:

- Soil mixing/blending/storage/stockpiling/packaging
- Manure storage/packaging
- Liquid waste recycling including power generation
- Outdoor composting
- Inside composting

The following City approvals have been granted for the **Premises**:

- BA99/0655 was an industrial building approval granted 9 April 1999;
- DA02/0176 appears to have been granted on 24 June 2002 for the construction of a leachate pond;
- DA02/0395 appears to have been granted on 21 November 2002 for sheds, office and hardstand area for the existing soil blending facility;
- BA02/2486A was granted on 07 January 2003 as a building approval for two steel framed warehouses;
- DA09/0039 for the enclosed composting shed was granted on 4 April 2009;
- BA09/0591 issued on 23 April 2009 for a building application of composting pits; and
- DA12/0633 was granted on 16 November 2012 for the AD plant.

A development application was submitted in May 2016 for the construction of an additional three warehouses south of the AD plant however the **Delegated Officer** understands that this was submitted for activities associated with the Activated Carbon activities.

The City has confirmed that the following infrastructure does currently benefit from planning approval:

- Leachate pond (Pond 4 on Attachment 1);
- 2 x biofilters attached to manure shed;
- Biofilter on AD plant.

Planning limits core hours of operation to 7am to 6pm Monday to Saturday (this is more restrictive than the current operational hours worked by Richgro).

DWER understands from the City that a retrospective planning application was submitted in March 2017 to seek approval for:

- Commercial poly tunnels associated with the blueberry farm;
- The 2 x biofilters attached to the manure shed;
- The biofilter on the AD plant; and
- To extend the hours of operation to allow 24 hours a day;

An additional retrospective planning approval for Pond 4 was submitted to the City in May 2017.

In June 2017, the **Licence Holder** also applied to the City for planning approval for a new pond (Pond 5) and for new office buildings. No licence amendment application has been received by DWER for the construction and use of Pond 5 and it has therefore not been considered in this Review.

#### 4.1.2 Water approvals

The **Licence Holder** has been granted a licence (number GWL168463(1)) by the former Department of Water (now DWER) to abstract up to 12,500 kL per year of groundwater for dust suppression on the **Premises** and irrigation of 1 hectare of lawns and gardens. The **Licence Holder** has historically over abstracted groundwater which exceeds their authorised allocation.

DWER understands that the **Licence Holder** is currently considering strategies to reduce groundwater abstraction.

The **Premises** is within a Priority 2 Public Drinking Water Source Area as proclaimed under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909*, which is managed by DWER.

#### 4.1.3 Stable Fly

As the **Premises** is situated within the City of Cockburn, it is subject to the *Biosecurity and Agriculture Management (Stable Fly) Management Plan 2016* which prohibits the storage and transport of poultry manure which has not been treated to AS 4454, or a measure approved under the *Biosecurity and Agriculture Management Act 2007*.

Advice from the Department of Primary Industries and Regional Development (DPIRD) indicates that no approval has been granted by DPIRD to accept this manure and based on information received from the **Licence Holder**, poultry manure accepted onsite has not been composted to AS 4454 prior to being received.

Following inspections of the **Premises** by DPIRD Officers in November 2017, the **Licence Holder** has submitted an application to DPIRD for acceptance of untreated poultry manure and has ceased to accept any untreated poultry manure until DPIRD approval, or the manure has been treated by composting to AS 4454.

## 4.2 Part V of the EP Act

### 4.2.1 Guidance Statements

The overarching legislative framework of this assessment is the EP Act and EP Regulations.

DWER's Best Practice Regulatory Principles have informed this assessment in addition to Guidance Statements published by the former Department of Environment Regulation:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessments (February 2017)*

### 4.2.2 Works approvals, licences and licence amendments

Table 4 provides a list of works approvals and licences granted for the **Premises** since 1995.



Further information on these approvals is provided below the table.

**Table 4: Instrument log**

Instrument	Issued	Description
L7308/1 (not confirmed)	08/12/1995	Licence granted to undertake solid sludge screening
L7308/2	11/09/1998	Issued to the <i>Licence Holder</i> .
L7308/3	11/09/1999	Licence reissue
L7308/4	12/09/2000	Licence reissue
L7308/5	12/09/2001	Licence reissue
L7308/6	18/11/2002	Licence reissue
L7308/7	29/12/2003	Licence reissue
L7308/8	8/10/2004	Licence reissue
L7308/9	17/10/2005	Licence reissue
L7308/10	2/11/2006	Licence reissue (authorised between 2/11/2006 to 22/12/2006)
L7308/11	30/11/2006	Licence reissue
L7308/11	21/06/2007	Licence amendment to correct administrative error related to bore locations
L7308/1998/12	13/10/2011	Licence reissue
W5311/2012/1	23/01/2013	New works approval granted to construct the AD plant.
L7308/1998/12	19/11/2013	Occupier initiated licence amendment to include prescribed premises category 61 (liquid waste facility).
L7308/1998/13	17/10/2014	Licence reissue
W5311/2012/1	20/01/2016	Occupier initiated amendment to extend duration of works approval.
L7308/1998/13	29/04/2016	Department initiated licence amendment to extend licence duration.
W5311/2012/1	18/07/2016	Occupier initiated amendment to extend duration of works approval.
L7308/1998/13	DRAFT	Licence review including occupier initiated licence amendment to include AD plant onto licence.

Based on a review of available Department records, there does not appear to have been an original works approval granted for the construction of this *Premises*. The earliest record of a licence having been granted for this *Premises* dates back to 8 December 1995 which was granted for a period of 21 days to authorise sludge screening. It is assumed that this was granted as licence number L7308/1 and based on information provided by the *Licence Holder*, the *Premises* was not in the *Licence Holder's* possession until 1998.

A copy of this original licence cannot be located on the Department's records however other

records indicate that sludge processing ceased onsite in early 1996 however composting activities had been undertaken prior to this licence and were continuing to occur past this date. Given that the **Premises** was operating as a composting facility, it is likely that a works approval was not granted to the original licence holder on the basis that retrospective works approvals are not typically granted.

Licence L7308/2 was granted to the **Licence Holder** on 11 September 1998 for a period of one year. Although not specified as a condition of the licence, the associated throughput for the **Premises** was 50,000 tonnes/year as a category 67A composting facility.

Works approval W5311/2012/1 was granted on 18 January 2012 to construct the Anaerobic Digestion facility. Construction of the plant was completed in December 2014 and it has been operating since this time. The works approval was amended on 20 January 2016 and 18 July 2016 after being initiated by the **Licence Holder** to allow additional time to prepare and submit the works approval compliance documentation, as well as enable sufficient time to submit a licence amendment for the inclusion of the AD plant operations onto the licence. The works approval expired on 20 October 2016. Compliance documentation for the works approval was submitted to the former DER however it was found to be deficient (see section 4.2.5).

In November 2013 the licence was amended to authorise the acceptance of controlled wastes limited to poultry processing waste and non-alcoholic food and beverage processing wastes. The licence was renewed in October 2014 which included a conversion of the licence into the then new licence style. Prior to this date, the licence did not specify annual throughputs (other than those for liquid wastes). The licence renewal included annual throughput values as provided by the **Licence Holder**.

The licence was amended on 29 April 2016 to extend the licence duration from 22 October 2019 to 22 October 2025.

On 25 November 2016, the Department received an application to amend the Licence to incorporate the AD plant operations. The amendment application was accepted for assessment on 15 February 2017. The **Delegated Officer** has considered the licence amendment application as part of this Review to consolidate the assessment and decision making processes in accordance with Guidance Statement: **Decision Making** (February 2017).

To date, DWER has not received an amendment application from the **Licence Holder** to include the use of Pond 4 or for the use of digestate on the **Premises**. Given the broad scope of this Review, these matters have been considered by the **Delegated Officer** as part of the Review.

### 4.2.3 Compliance inspections

The following compliance inspections were conducted by the Department:

#### 2000

27 June 2000 – records indicate that at the time of the inspection, there were no identified compliance issues.

#### 2002

10 January 2002 – records indicate that an Environmental Field Notice (No. 01613) was served on 18 January 2002 to require secondary containment around the waste oil storage tank as required by licence condition G3.

#### 2004

31 August 2004 – records indicate that at the time of the inspection, there were no identified compliance issues.

## 2009

8 October 2009 – records indicate that at the time of the inspection, there were no identified compliance issues.

## 2012

30 May 2012 – records indicate that the **Licence Holder** was found to be non-compliant with licence condition (G4) in regards to the storage of chlorine in an IBC within an area that was not bunded.

## 2013

A compliance inspection was undertaken on 10 December 2013. As a result of the inspection the Department determined that the **Licence Holder** was non-compliant with the following conditions:

- Annual Monitoring Report and Annual Audit Compliance Report submitted after the due date of 1 February contrary to Licence conditions G1 and G2; and
- some unmarked drums containing waste oil were not bunded appropriately and were stored off the hardstand area contrary to licence condition G4;

## 2014

A compliance inspection was undertaken on 28 July 2014. The inspection could not determine whether the **Licence Holder** was compliant with the following licence conditions:

- the diesel bund was sighted to be made of concrete bricks and it was noted that some portions of the grout were cracked and therefore inspectors could not determine the permeability of the bund walls as required under Licence condition G4;
- at the time of inspection no tracking form receipts were provided to demonstrate compliance with the *Environmental Protection (Controlled Waste) Regulations 2004* for the disposal of waste liquids as required under Licence condition G5b;
- the **Licence Holder** was unable to provide the most recent groundwater monitoring results to demonstrate compliance as required under Licence condition W3a; and
- the **Licence Holder** was unable to provide the laboratory reports for review at the time of inspection to demonstrate compliance with NATA requirements as required under licence condition W3c.

These matters have since been rectified.

## 2016

A compliance inspection was undertaken on 29 September 2016. As a result of the compliance inspection the following potential breaches were noted:

- acceptance of alcoholic wastes (controlled waste K200), Car and truck wash waters (controlled waste L100) and industrial wash waters contaminated with controlled waste (controlled waste L150) contrary to Licence Condition 1.3.2;
- chicken manure stored onsite longer than 48 hours prior to being added to the composting process, contrary to the requirements of Licence Condition 1.3.4;
- liquid waste being stored onsite longer than 48 hours prior to being added to the composting process, contrary to the requirements of Licence Condition 1.3.4;
- the use of AD Plant digestate within the composting process contrary to the requirements of Licence Condition 1.3.4 as digestate is not a prescribed waste type in Table 1.3.1 nor specified in the process requirements of Table 1.3.2, which specifies

that only those waste types detailed in Table 1.3.1 are subjected to the treatment by composting process;

- the use of Pond 4 as a leachate pond, contrary to the requirements of Licence Condition 1.3.5 (Table 1.3.3), which only authorises the use of Pond 1, Pond 2, and the Main Dam (now known as Pond 3) as leachate ponds;
- the construction of Pond 4 without obtaining any approvals under Part V of the **EP Act**, contrary to Section 53 of the **EP Act**;
- the use of AD Plant digestate in the outdoor composting process, contrary to the requirements of Works Approval (W5311/2012/1) Condition 1, whereby the works are not being undertaken in accordance with the approved documentation of Condition 1. The approved Works Approval document stated that the digestate will be pumped into Richgro's indoor fertiliser plant as a raw material and no digestate will be exposed to the open air without a treatment in place; and
- The use of AD Plant digestate in the outdoors composting process is contrary to Section 56 of the *Environmental Protection Act 1986*, whereby the occupier has caused or increased an emission from the prescribed premises, or altered the nature of waste or odour emitted, otherwise than in accordance with conditions of licence L7308/1998/13 and Works Approval W5311/2012/1.

An initial investigation into the acceptance of controlled waste codes L100 and L150 identified that the delivery driver assigned incorrect waste codes to the wastes.

The Licence Holder has since ceased to accept alcoholic wastes onto the Premises and manures and liquid wastes are now not being stored for longer than 48 hours being before added to the AD process. The Licence Holder has also submitted a retrospective planning application to the City of Cockburn for Pond 4.

Although the matter in regards to acceptance of L100 and L150 has been resolved, all other matters are part of an ongoing investigation by DWER which is subject to confidentiality.

#### **4.2.4 Annual Environmental Reports and Annual Audit Compliance Reports**

The Licence requires the proponent to submit an Annual Audit Compliance Report (**AACR**) and Annual Environmental Report (**AER**) each year.

##### **2014 AER and AACR**

These were reviewed in March 2015. The reports did not contain all the information required by the licence. Specifically it did not confirm if there had been any malfunctions or failures at the **Premises** or whether freeboard targets on the ponds had been exceeded. The **Licence Holder** was asked to provide a statement to the Department advising if there were any failure or malfunction of any pollution control equipment, any environmental incidents that may have occurred with any action taken and responses carried out to any freeboard target exceedances. A review of Department records indicate that this was not provided.

The review of this AER also identified elevated levels of total nitrogen and ammonia in groundwater. Further information was requested from the occupier including specifications on bore logs, screen lengths, confirmation on groundwater flow and how sampling is undertaken however this was not provided and as a result, influenced the decision to review the licence. Compliance matters are ongoing and confidential in nature.

##### **2015 AER and AACR**

These were reviewed in March 2016. The reports were submitted after the due date on the licence and did not include all the information required by the licence. The AER did not contain throughput information as required under Licence condition 5.2.1 and condition 3.6.1.

It was also noted that no non-compliances were declared in the AACR for the 2015 reporting

period despite the AER reporting that digestate from the anaerobic digester plant was applied to the composting windrows, which was not in accordance with the process requirement described in condition and Table 1.3.4 of the licence. The **Licence Holder** was asked to resubmit the AACR, reporting about this non-compliance. A resubmitted AACR was provided in October 2016 however it still did not declare the non-compliance of applying digestate onto outdoor windrows in contravention of the licence. This matter is still being considered by DWER.

#### 4.2.5 Works approval compliance

The compliance documentation for works approval W5311/2012/1 was submitted to the Department. A review of the documentation identified the following matters that were identified as being either not determined or non-compliant:

- The storage tank as specified under the works approval had not been constructed. By not constructing the storage tank, the Works Approval holder did not comply with condition 1 which required works to be undertaken in accordance with the works approval application supporting documentation.
- The power generators installed at the **Premises** are of a different model and design than was assessed and authorised under the works approval. The generators installed at the Premises have a capacity of 1.2MW each which is more than double the capacity assessed (526 kW each with combined capacity of 1.05MW). Due to the change in model, the stack height and diameter are also varied from what was authorised. This is also a contravention of condition 1.
- Compliance documentation was received however it did not meet the requirements of condition 2, namely that "works were constructed in accordance with the conditions of the Works Approval and documentation supporting the application to construct the works." Compliance with this condition was not met.
- The Quality Control/Quality Assurance Certificate from an independent third party was not submitted under after commissioning had been completed which is in contravention of condition 3 requiring the documentation to be provided prior to commissioning;
- Only two groundwater monitoring bores were installed within the vicinity of the AD plant. This is in contravention of condition 4(a) which specified that three bores were required to be installed.
- As only two bores were installed, condition 4(b) was also identified as being non-compliant. Data for the required baseline monitoring of these bores was not provided. It could also not be determined if the bores were constructed and logged as required by this condition.
- The Department was not notified when commissioning of the plant commenced which is in contravention of condition 7.
- The Odour and Air Monitoring Program undertaken as part of commissioning was not undertaken during normal operating conditions as required by condition 8(b) based on information contained in the commissioning report, knowledge that the biogas generators were not operational at the time as well as the composting shed biofilters being off-line.
- The Odour and Air Monitoring Program did not provide an assessment or analysis of data obtained under commissioning with data provided in the baseline report, making it difficult to determine the impacts from operations. It also did not propose an improvement program which was required as art of condition 8(c).
- Noise monitoring was not undertaken at sensitive receptors and no noise mitigation

measures were proposed to address the potential exceedance of the *Environmental Protection (Noise) Regulations 1997* which was a requirement of condition 10.

- Prior to the works approval being amended in January 2016, it was identified that the plant had been in commissioning for up to 12 months. The original works approval specified a commissioning period not exceeding four months.

An investigation into compliance with the works approval is ongoing and confidential in nature.

#### 4.2.6 Compliance history check

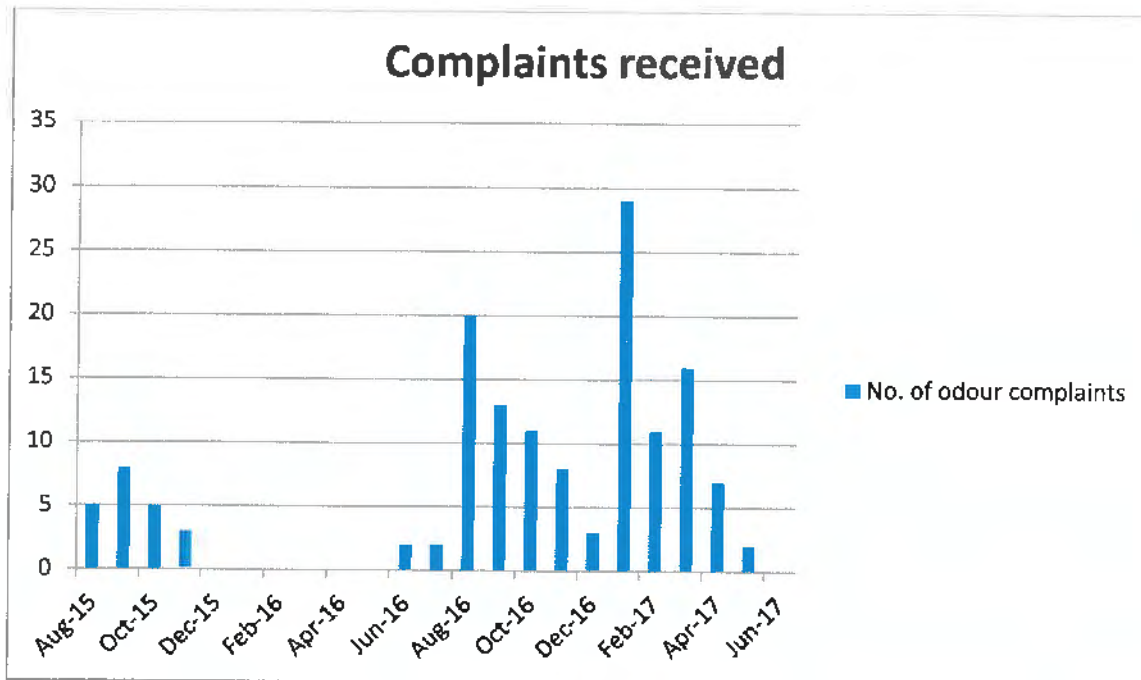
Between December 2013 and June 2017 the Department received 145 complaints from 33 different complainants in relation to noise emissions, dust emissions and odour emissions arising from the **Premises**. An additional complaint related to the expansion of the **Premises**. Of these complaints:

- 136 related only to odour from the Richgro site affecting a localised area;
- 2 related to dust and odour impacts;
- 2 related only to dust emissions;
- 4 related to noise emissions, mostly at night; and
- 1 related to expansion of the **Premises**.

Complaints related to a range of impacts associated with odour, dust and noise emissions from the **Premises** including:

- impacts to health such as headaches;
- impacts to amenity and wellbeing such as the inability to open windows and increases to the requirements to clean cars, air conditioning systems and windows;
- health concerns over contaminants in dust.

Figure 1 shows the number of odour complaints received by DWER regarding the Richgro **Premises** between August 2015 and June 2017 (up to 30 June 2017). No odour complaints were received prior to August 2015. Further analysis of odour complaints is included in section 4.3.5.2.



**Figure 1: Odour complaints received by the Department**

On 1 April 2017 Richgro ceased applying digestate at the Premises upon request by the Department.

**The Delegated Officer has reviewed the information regarding compliance history of the Licence Holder and has found:**

1. Works approval W5311/2012/1 expired on 20 October 2016. There have been no approvals granted under Part V of the Environmental Protection Act 1986 (EP Act) to operate the Anaerobic Digestion plant.
2. A licence amendment application has been submitted by the Licence Holder to operate the AD plant. DWER has consolidated its decision making and is assessing the amendment application as part of this licence review.
3. No applications have been sought by the Licence Holder to use digestate at the Premises or to use Pond 4.
4. Throughout the history of the licensed Premises, there have been a number of non-compliances identified by DWER officers. These include the failure to provide annual reports by the due date, incorrect storage of wastes, the acceptance of unauthorised wastes, application of digestate onsite, operation of the AD plant, and non-compliance with the requirements of the works approval.
5. Pond 4 has been constructed without authorisation under the EP Act.
6. A significant number of complaints have been received from the local community regarding emissions of odour, dust and noise from the Premises.
7. Complaints have decreased significantly since the Licence Holder ceased applying digestate to the outdoor windrows.

## 4.3 Modelling/monitoring data and investigations

### 4.3.1 Anaerobic Digestion facility

Works approval W5311/2012/1 required the Works Approval Holder to undertake the following during the commissioning of the AD plant:

- monitor background groundwater quality of the new bores installed as part of the works approval;
- monitor air emissions from the generator and flare stacks;
- predict likely noise emissions through modelling and verify noise levels through noise monitoring; and
- undertake field odour survey to verify odour emissions.

As part of the works approval conditions, the Works Approval Holder submitted a series of baseline reports and commissioning reports to address air, odour and noise emissions. These reports have been considered by the **Delegated Officer** and the findings are discussed below in each relevant emission section (4.3.2 – 4.3.5).

### 4.3.2 Noise

DWER's Noise Regulation has undertaken a review of noise emissions from the premises. This review is contained in the Technical Expert Report (Noise Report) contained in Appendix 3. The Noise Report considered the following documents as part of the commissioning documentation, other information required under works approval W5311/2012/1, and information provided as part of this licence review:

Document Title	Author	Date of document
<i>Noise Emissions following Control (REF: 18026-1-12116): Richgro Jandakot</i>	Herring Storer Acoustics	16 July 2014
<i>Odour, Air and Noise Survey Plan (Commissioning Phase) (Ref: 1314-123): Richgro Garden Products – Works Approvals W531/2012/1; Licence Condition 9, 10 and 11</i>	Emission Assessments Pty Ltd	3 September 2014
<i>Environmental Noise Assessment (Ref: 19170-1-13116): Richgro Jandakot – 2015 Operations Anaerobic Digester – for Emission Assessments</i>	Herring Storer Acoustics	12 May 2015
<i>Noise Assessment (AD Facility Commissioning) (Report No. 1415 – 229): Richgro Garden Products</i>	Emission Assessments Pty Ltd	5 June 2015
<i>Richgro Jandakot Operations, Environmental Noise</i>	Herring Storer Acoustics	8 September 2017



**The Delegated Officer has reviewed the information regarding the works approval noise emissions monitoring data and has found:**

1. Prior to 2017, noise levels at neighbouring premises had been predicted by modelling but had not been validated by noise monitoring.
2. Compliance with the Environmental Protection (Noise) Regulations 1997 (Noise Regulations) had not been demonstrated at neighbouring properties.
3. Noise levels may have exceeded the Noise Regulations at neighbouring premises to the north-west of the **Premises**.
4. Noise monitoring at neighbouring properties was required to determine compliance with the Noise Regulations.

**The Delegated Officer has reviewed the information provided in the 2017 acoustic assessment and has found:**

5. Other than the green waste grinder/shredder, noise monitoring demonstrates that all operations and equipment are compliant with the Noise Regulations during both day-time and night-time operations.
6. The proposed new location for the green waste grinder/shredder appears to enable compliance with the Noise Regulations during day-time hours but may exceed assigned levels during night-time operations.
7. Restrictions on the hours the grinder/shredder can operate are required to ensure compliance with the Noise Regulations.

#### 4.3.3 Groundwater

The **Delegated Officer** has considered a review of historical bi-annual monitoring data provided by the *Licence Holder* as part of the licence requirements. It was identified during a review of the 2014 and 2015 annual reports that there was a rising trend of nitrogen and ammonium in groundwater bores.

To further inform this licence review, groundwater monitoring data was obtained from the Water Corporation for production bore J130, located immediately north of the **Premises** boundary. A review of this data is contained in the Technical Expert Report (Groundwater Report) contained in Appendix 4.

**The Delegated Officer has reviewed the information regarding groundwater monitoring data and information within the Technical Expert Report and has found:**

1. Regional groundwater direction is generally northerly towards the Swan-Canning Estuary however the local inferred groundwater flow is easterly to north-easterly due to the effects from production bores within the vicinity of the **Premises**.
2. Ammonium and sulphate ion concentrations are elevated in groundwater and show an increasing trend in concentration over the past 16 years.
3. The likely principal source of these ammonium and sulphate is the over abstraction of water from production bores in the area, resulting in the release

*of nutrients from the oxidation of sediments in the Lukin Swamp Reserve (wetland) leaching into groundwater, and not leachate from **Premises** operations.*

- 4. Some periodic peaks in ammonia in the J130 abstraction bore may be from the **Premises**.*

#### **4.3.4 Leachate Ponds**

The **Delegated Officer** has considered an assessment of potential leachate leakage rates from the leachate ponds on the **Premises**. This assessment considered the potential siting of the ponds within the water table and the adequacy of the groundwater monitoring network at the premises. The findings of the assessment are contained within the Technical Expert Report (Leachate Pond Report) contained in Appendix 5.

**The Delegated Officer has reviewed the information regarding groundwater monitoring data and the Leachate Pond Report and has found:**

- 1. The existing groundwater monitoring bores are not sufficient to monitor pathways from containment infrastructure such as hardstands and ponds to sensitive receptors to determine whether this infrastructure is effectively controlling leachate emissions.*
- 2. Five new groundwater monitoring boreholes are recommended to be constructed to allow effective monitoring to be undertaken.*
- 3. Based on measured groundwater levels, the base of the leachate ponds may be below the groundwater table for up to six months of the year (winter).*
- 4. Rising groundwater levels have the potential to impact on the integrity of the liners of the leachate ponds if sufficient leachate is not present in the ponds to counteract the hydrostatic uplift.*
- 5. When the base of the ponds are below the groundwater table, some ingress of groundwater into the ponds may occur.*
- 6. Leachate emissions can occur through leakage through the pond liner where it is above the groundwater table and diffusion when the liner is below the groundwater table.*
- 7. Seepage fluxes from leakage of leachate through the pond liner may result in 10.71kg of nitrogen inputs to groundwater over a 6 month period when the base of the ponds is above the groundwater table.*
- 8. Seepage fluxes from diffusion through the pond liners may result in 23.04g of nitrogen inputs to groundwater over the 6 month period when the base of the ponds is likely to be below the groundwater table.*
- 9. Concentrations of nitrogen of 4mg/L in groundwater beneath the **Premises** are likely to occur during the 6 month period when the base of the ponds is above the groundwater table. It is predicted that this concentration will decrease to approximately 1mg/L within 100m of the ponds due to the effects of denitrification and hydrodynamic dispersion within the aquifer.*
- 10. The Water Corporation production borehole is located approximately 300m from the closest leachate pond. Groundwater in the vicinity of the leachate pond will take between 10 and 24 years to reach this production bore.*
- 11. Maintaining nitrogen concentrations in the groundwater beneath the **Premises** to 5mg/L is likely to ensure the concentrations in the production bore do not exceed 0.5mg/L.*

12. *Specific groundwater testing methods can be used to determine whether contamination in the groundwater is naturally occurring or arising from the Premises.*

### 4.3.5 Odour and air emissions

#### 4.3.5.1 Review of odour and air emission reports

The **Delegated Officer** has reviewed the odour and air emission reports provided by the **Licence Holder** as part of works approval W5311/2012/1 compliance documentation following construction of the AD plant.

The documents reviewed by DWER are as follows:

Document Title	Author	Date of document
<i>Odour, Air and Noise Survey Plan (Commissioning Phase) (Ref: 1314-123): Richgro Garden Products – Works Approvals W531/2012/1; Licence Condition 9, 10 and 11</i>	Emission Assessments Pty Ltd	3 September 2014
<i>Report Number: 1415-230 Richgro: AD Facility Stack Emissions Commissioning 2015</i>	Emission Assessments Pty Ltd	3 June 2015
<i>Report Number: 1415-093 Richgro Garden Products: Field Odour Survey: Anaerobic Digester Facility - Commissioning 2015</i>	Emission Assessments Pty Ltd	30 June 2016
<i>RichGro Biogas Generator Stack Air Quality Modelling – 2015 Stack Test Data</i>	Air Assessments on behalf of Emission Assessments Pty Ltd	11 August 2017

The City of Cockburn (the City) undertook an analysis of dust particles from six residential locations surrounding Richgro in April and May 2017. The analysis tested for the presence of metals, elements, particle size and total organic carbon (in one sample). The City provided these results to the Department and the results do not indicate any contaminants considered as harmful to health as listed in the Health Investigation Levels (HIL) within the Contaminated Sites Management Series, *Assessment levels for Soil, Sediment and Water* (February 2010) published by the Department of Environment and Conservation (CSMS 2010).

One of the samples exceeded the 50 mg/kg Ecological Investigation Level for cobalt (54 mg/kg) as specified in the CSMS 2010 but this remains under the 100 mg/kg HIL. The dust results are shown in Appendix 6.

**The Delegated Officer has reviewed the information regarding odour and air emissions monitoring and field data as part of the works approval commissioning and has found:**

1. *The odour assessment detailed in the document "Report Number: 1415-093 Richgro Garden Products: Field Odour Survey: Anaerobic Digester Facility - Commissioning 2015" was not completed under normal operating conditions and as such the findings and conclusions relating to baseline and commissioning odour emissions are limited in value.*
2. *The odour assessment also detailed in the above mentioned document did not consider the use of digestate on outdoor composting windrows.*
3. *Based on information contained within all of the documentation detailed above, the AD plant does not appear to be a major source of odour on the **Premises**.*
4. *The air emissions assessment within the document "Report Number: 1415-230 Richgro: AD Facility Stack Emissions Commissioning 2015" did not include an assessment against the baseline report.*
5. *DWER's review of this report identified that emissions from the power generator stacks had low emission rates however there were discrepancies between the modelled data from 2012 and the monitoring data from 2015.*
6. *The **Licence Holder** undertook re-modelling of the data generator stack to reflect the monitoring results for the purposes of providing a more accurate representation of air emissions which are discussed in Section 4.3.5.2 below.*
7. *Monitoring results for dust emissions did not indicate any contaminants considered harmful to health.*

#### **4.3.5.2 Review of remodelled stack data**

The Delegated Officer's review of the modelling data for 2012 and monitoring data from 2015 for stack emissions identified the following inconsistencies:

Stack exit temperature was between 130 – 140 °C for monitoring data compared to the modelled value of 410 °C;

NO<sub>x</sub> was being emitted at a rate of 0.54 g/s compared to the modelled value of 0.28 g/s;

Monitoring results indicated that carbon monoxide was being emitted at a rate of 0.81 g/s compared to the modelled value of 0.56 g/s.

At the request of the Delegated Officer, the Licence Holder remodelled the generator stack emissions using the monitoring data results. DWER's Air Quality Branch (AQ) undertook a review of the remodelled data and ran simulations of the data to verify the results. Table 5 below depicts the results of the AQ simulations:

**Table 5: AQ simulation results**

Pollutant and averaging time	Emission rate (g/s)	Concentration (µg/m)		Backgnd (µg/m3)	Conc. + Backgnd (µg/m3)	Percent of standard (%)	
						Richgro alone	Richgro + Backgnd
CO 8 hr 100% supplied	0.581	62		375	437	0.6 (0.6)	3.9
CO 8hr 100% corrected	0.81	90		375	465	0.8	4.1
CO 8hr 50%	0.46	80		375	455	0.7	4.0
		NOx	NO2*				
NO2 1 hr 100%	0.54	120	42	42	84	17.1 (16)	34.1
NO2 1 hr 50%	0.42	140	49	42	91	19.9	37.0
NO2 Annual 100%	0.54	3	2.1	14	16.1	3.4 (3.2)	26.0
NO2 Annual 50%	0.42	3.2	2.24	14	16.24	3.6	26.2

\* NO2/NOx ratios from 2012 modelling report used.

The standard referred to in Table 5 is the *National Environment Protection (Ambient Air Quality) Measure (NEPM)*.

**The Delegated Officer has reviewed the remodelled power generator stack emissions data and has found:**

1. The power generators proposed to be installed under works approval W5311/2012/1 were changed to a different model which resulted in a change to the height and diameter of the stack which caused a variation in results between modelled and monitored data.
2. The proposed stack was 6m in height with a 0.25m diameter which was changed to 8m as-built stack with a diameter of 0.36m.
3. Modelling data was only undertaken for one of the 8m power generator stacks and not for both operating simultaneously.
4. The differences in stack exit temperature identified between the modelled and monitored data is due to the AUSPLUME emissions model using the temperature unit of Kelvin instead of degrees Celsius. The values were consistent when converting into the same unit of temperature.
5. The emission rate for NOx (0.54 g/s) was confirmed as being accurate.
6. The maximum concentration including both the Richgro emissions and background levels for NOx was calculated as 37% of the NEPM.
7. There was an error in the provided emission rate for CO being 0.581 g/s instead of 0.81 g/s. This was corrected in the AQ simulation and resulted in a higher concentration.
8. The maximum concentration including both the Richgro emissions and background levels for CO was calculated as 4.1% of the NEPM.

**Upon receipt of draft copies of this Decision Report and licence conditions, the Licence Holder undertook additional remodelling (August 2017) for both stacks. The Delegated Officer has also reviewed this data and has found:**

9. Both generator stacks were correctly modelled using monitored emissions input data.
10. The highest predicted maximum ground level concentration (1-hour averaging

period) for Richgro and with background levels was 43% of the standard and related to NOx emissions.

11. The highest predicted maximum ground level concentrations for Richgro and background levels for CO and SO<sub>2</sub> emissions were less than 7% of the standard.

12. Air emissions from the generator stacks do not pose a significant risk to the environment or public health.

#### 4.3.5.3 Review of odour complaints

Due to the significant number of odour complaints received in the area from June 2016 to June 2017, a desktop review has been undertaken to determine if the odour complaints could reasonably be attributed to the Richgro **Premises** based on likely wind direction. Figure 2 depicts an overview of the number of different complainants in each location surrounding the Richgro **Premises**, and Figure 3 depicts the number of complaints from each area. The prevailing wind direction (obtained from the Bureau of Meteorology, Jandakot Airport data) is also included on these figures.



Figure 2\*: number of different complainants in each location surrounding the **Premises**

\* Note that three complainants have not been included on this figure as two addresses were not provided for the associated complainant and another complainant is listed as located over 2km north-east of the site. The daily wind direction was obtained from the Bureau of Meteorology for 9am and 3pm.



**Figure 3\*:** number of complainants at each location and number of complaints from each area during June 2016 to June 2017 (up to 30 June 2017)

\* Note that two complaints have not been included on this figure as an address was not provided for the associated complainant and another complaint is located over 2km north-east of the *Premises*. The daily wind direction was obtained from the Bureau of Meteorology for 9am and 3pm.

The following figures (4 to 6) have been produced to show the general location and number of complaints when multiple complaints were received on one day, as well as depicting the associated wind direction. These images represent a snapshot of the information available to DWER which depict a correlation between the *Premises* and complaints received.



**Figure 4: Odour complaints 16 August 2016**



**Figure 5: Odour complaints 31 August 2016**

Figure 4: One complaint (received from location marked with the '1') was received around 9am with the other two received at 6:30pm

Figure 5: All of these complainants were received between 7:30am and 9:30am



Figure 6: Odour complaints 6  
January 2017

One complaint does not have an associated time of event. The other two occurred between 1pm and 2pm.

While the wind directions are based on averaged data for the area, it demonstrates that on many occasions, complaints were received from locations where the wind direction could reasonably be attributed to the Richgro **Premises** as a potential source of odour.

Based on available Department records, no odour complaints were received prior to the construction of the AD plant and digestate being produced. Construction is understood to have been completed at the end of 2014, with commissioning and the commencement of digestate production occurring between January 2015 and March 2016.

DWER investigated complaints which started to be received at the end of August 2015 and identified that a highly odorous feedstock had been received at the AD plant, as well as a secondary occurrence that caused the AD plant to fail and resulted in unprocessed digestate being applied to windrows, generating significant odours. These events resulted in 12 complaints being received by the then DER between 27 August 2015 to 9 September 2015.

An additional 8 odour complaints were received by the Department from the end of September 2015 until the end of November 2015. The source of these odours was not identified however given the time between when the odours feedstock and plant malfunction occurred, it is considered that the second series of complaints is unrelated. Between December 2015 and May 2016, no odour complaints were received.

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

1. No odour complaints were received in relation to the Premises, prior to the AD plant becoming operational and digestate being produced.
2. An incident in late August/early September 2015 resulted in a significant number of odour complaints and was considered to be due to digestate being applied to the outdoor composting windrows.
3. DWER's review of odour complaints indicates that the odours experiences in



*the community can reasonably be attributed to the Richgro Premises.*

#### **4.3.5.4 Review of Odour**

The **Delegated Officer** has undertaken a review of the potential odour emissions at the **Premises**. This review is contained in the Technical Expert Report (Odour Report) contained within Appendix 7.

**The Delegated Officer has reviewed the information within the Odour Report has found:**

- 1. The AD process itself is not considered to be a significant source of odour on the Premises.*
- 2. Aerators within the leachate ponds assist in reducing their odour emission potential.*
- 3. Application of digestate onto outdoor windrows prior to 1 April 2017 is likely to have been a source of odour emissions.*
- 4. Lukin Swamp is unlikely to be a significant source of odour.*
- 5. Production bores are unlikely to be a source of the odour being experienced in the community.*
- 6. Desludging of the leachate ponds is likely to be a source of odour.*

**DWER's Air Quality Services has considered the suitability of the biofilters in regards to the application of digestate inside the composting shed and has recommended/advised:**

- 7. The structure of the biofilter spongelite media is inspected to determine if there have been any changes that may affect surface area available for microbial development, and also on the media porosity, compaction, percentage of fine particles, and preferential channelling.*
- 8. The biofilter is inspected for water pooling at the base of the biofilter, if there are any pest infestations, if there is mould, fungi or other similar organisms present as these may reduce the surface area available for the development of the bacterial population.*
- 9. The biofilter is inoculated (re-seeded) with bacteria and microbes prior to use;*
- 10. The composting shed and biofilters are inspected for any holes or gaps which will impact negative pressure of the shed and on the efficiency of odour treatment and to correct any identified issues prior to use.*
- 11. The Air Exchange Rate of the biofilters appears to be sufficient.*
- 12. Additional tests such as verifying the Air Exchange Rate, verifying negative pressure, and verifying biofilter performance should be undertaken by the Licence Holder prior to its use.*

#### **4.3.5.5 Water balance assessment**

The **Delegated Officer** has considered the quantity of liquid that would be required to undertake the indoor composting activities on the **Premises** which include the application of digestate.

It is assumed that the averaged moisture content of the green waste received at the **Premises** is 35% (by weight) which is averaged between the summer and winter moisture content

values of 30% and 40% as provided by the **Licence Holder**. The **Licence Holder** provided a moisture content of 95% (by weight) for digestate.

Based on the information provided by the **Licence Holder**, the storage capacity of the shed appeared to be significantly larger than the volume calculated by DWER, which were determined using the dimensions of the shed from plans submitted to the City of Cockburn. The plans indicated a length of 73m and bay width of 5.7m.

The **Licence Holder** has provided values of 2.0m (rectangle shape to top of bay) and 1.5m (peak of compost windrow) for height of green waste. Using these figures and the bay width, the **Licence Holder** has proposed a cross-sectional value of 15.68 which equates to a bay capacity of 1144.64m<sup>3</sup> when multiplying it against the bay length. The Delegated Officer accepts this value.

The total capacity of the four bays at any one time is 4557.1m<sup>3</sup> however the **Licence Holder** has advised that turning of windrows is undertaken by using a front end loader to remove compost from one bay and place into the adjacent empty bay. This aeration process limits the capacity of the Composting Shed to a maximum of three bays at any one time which equates to a total of 3433.92m<sup>3</sup>.

The **Licence Holder** provided a density conversion for compost mix of 1 cubic metre being 0.52 tonnes. The capacity of the composting shed equates to approximately 1785.6 tonnes of green waste.

The **Delegated Officer** has assumed an average compost cycle takes 10 weeks for completion based on information provided by the **Licence Holder** estimating the process takes between 8 to 12 weeks from start to maturation. The Licence Holder has requested that the maturation process is completed outside of the composting shed and has proposed that once the compost has achieved biological stability, the risk of odours is reduced and the compost can be moved. Biological stability occurs after pasteurisation.

Assuming that biological stability can be achieved within four weeks, this equates to approximately 12 compost cycles per year, equating to a total throughput of 21,427.7 tonnes of green waste each year. However, the licence currently limits the input of green waste to 20,000 tonnes per year. The Licence Holder has requested as part of their comments on the draft documents, to include an additional 15,000 tonnes per year of green waste. This is deemed to be an increase in operations which is outside the scope of the licence review and has not been considered by the Delegated Officer. Based on the authorised input of 20,000 tonnes per year, a maximum of 11.2 compost cycles can be undertaken each year.

It is assumed that 1 tonne of green waste received at the **Premises** = 0.35 tonnes moisture (at 35%) and 1 tonne of digestate = 0.95 tonnes moisture (at 95%). The **Delegated Officer** has assumed that the optimal input of moisture content for green waste is 60% which has been determined in reference to the moisture content assigned at similar facilities, as well as published documentation for composting guidelines around Australia. It is assumed that 1 tonne of green waste = 0.6 tonnes moisture at the optimal level (60%).

To bring the moisture content of the green waste to the optimal level of 60% at the initial mixing phase, an additional 0.25 tonnes of moisture input is required per 1 tonne of green waste. The **Delegated Officer** calculated that 446.4 tonnes of digestate is required for the additional 25% moisture content at the initial mixing phase per the 1,785.6 tonnes of green waste.

Based on the annual 20,000 tonnes of green waste which can be processed through the composting shed, the final amount of compost produced will be approximately 30% less which equates to approximately 14,000 tonnes of compost per year.

The **Delegated Officer** has assumed a ratio of 1kL per 0.6 tonnes of compost for the amount of liquid required throughout the composting process and based on the total amount of compost produced, 23,333 kL of liquid is needed each year. The **Licence Holder** has advised

DWER that 30% of the total liquid needed for the composting process is comprised of bore water after pasteurisation, with the remaining 70% comprised of the liquid needed at the initial mixing phase and during pasteurisation.

The **Delegated Officer** has assumed a ratio of 1kL equals 1 tonne. Of the total 23,333tonnes of liquids needed annually, 16,333 tonnes of digestate per year can be used during the initial mixing and during pasteurisation, and the remaining 30% of bore water after pasteurisation equates to 7,000 tonnes. This equates to approximately 6666.67 tonnes of green waste to 5444.3 tonnes of digestate per windrow each year, with each windrow batch using 595.24 tonnes of green waste per 486.1 tonnes of digestate.

The daily amount of digestate that can be applied to the daily amount of green waste (54.8 tonnes) is a maximum of 44.75 tonnes. Of the 80 tonnes of digestate produced daily, an excess of 35.25 tonnes per day will be required to be removed offsite.

## 5. Location and siting

### 5.1 Siting context

The **Premises** is located in the City of Cockburn on the border of the City of Canning (the local government boundaries are depicted by the blue line in Figure 7). The surrounding area is predominantly zoned 'Parks and Recreation' and 'Public purposes - Commonwealth Government' under the Metropolitan Regional Scheme. The Public purposes - Commonwealth Government' zoned area comprises the Jandakot Airport.

Residences are located adjacent to the **Premises'** north-western boundary in the 'Resource' zone in the City of Cockburn's Town Planning Scheme No. 3 and adjacent to the north-western **Premises** boundary within the City of Canning. Pet kennels are also present in the vicinity of the **Premises**.

### 5.2 Residential and sensitive premises

The distances to residential and sensitive receptors are as follows:

**Table 6: Receptors and distance from activity boundary**

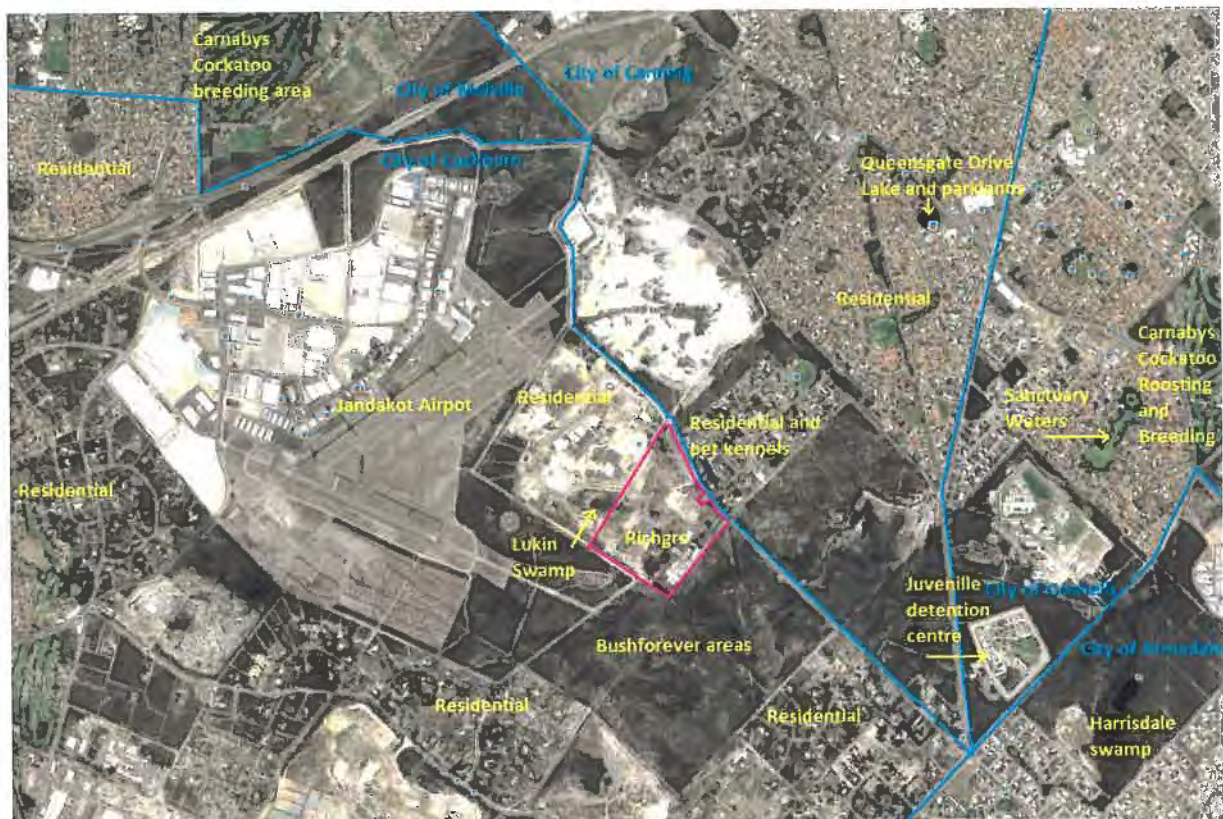
Sensitive Land Uses	Distance from Prescribed Activity
Approved residential area (with existing residences)	125m from prescribed activities (Pond 4)
Residential area (including pet kennels)	266m from prescribed activities (green waste processing area)
Residential area	830m south-west of from prescribed activities(Pond 3)
Residential area	850m south-east of from prescribed activities (Pond 3)
Jandakot Airport	625m south-west of Pond 4 (runway); Majority of airport is located 1.4km north-west of Pond 4
Queensgate Drive lake and parkland	Located 2.27km north-east of prescribed activities
Sanctuary Waters lake and parkland	Located 2.37km east north-east of prescribed activities

### 5.3 Specified ecosystems

The distances to specified ecosystems are shown in Table 7.

**Table 7: Specified ecosystems**

Specified ecosystems	Distance from the Premises
Lukin Swamp Reserve (City of Cockburn 'Actively Managed Conservation Reserve')	Approximately 100m west of Pond 4 in approved residential area
Harrisdale Swamp	Located 2.5km south-east of prescribed activities
Confirmed Carnabys Cockatoo Roost Areas	Located 2.4km east of prescribed activities
Confirmed Carnabys Cockatoo Breeding Areas	Located 3.17km east of prescribed activities.
<i>Planning and Development Act 2005</i> <ul style="list-style-type: none"> <li>State Planning Policy 2.8, <i>Bushland Policy for the Perth Metropolitan Region</i></li> </ul>	Immediately adjacent to <b>Premises'</b> eastern and southern boundaries which are areas undertaking prescribed activities
<i>Metropolitan Water Supply, Sewerage, and Drainage Act 1909</i> <ul style="list-style-type: none"> <li>Public Drinking Water Source Area (PDWSA)</li> </ul>	The <b>Premises</b> is located within a Priority 2 PDWSA and immediately adjacent to a Priority 1 PDWSA (Figure 8).



**Figure 7: Local location of Richgro**

## 5.4 Groundwater

The distance to groundwater is shown in Table 8.

**Table 8: Groundwater**

Groundwater	Distance from Premises	Environmental Value
Groundwater	<p>Depth to groundwater has been identified at approximately 3m below ground level as identified using the Department of Water's online mapping system, <i>Perth Groundwater Atlas (PGA)</i>.</p> <p>Groundwater monitoring data obtained as part of the licence requirements has confirmed this depth.</p>	<p>The <b>Premises</b> is located within a Priority 2 Public Drinking Water Source Area (PDWSA) and immediately adjacent to a Priority 1 PDWSA.</p> <p>Based on information available on PGA, groundwater is considered as fresh (Total dissolved solids between 0 – 500 mg/L). Water is used for potable use and for domestic use.</p>



**Figure 8: Priority Drinking Water Source Areas in proximity to Richgro**

*Legend:*

*Red = Priority 1*

*Orange = Priority 2*

*Green = Priority 3*

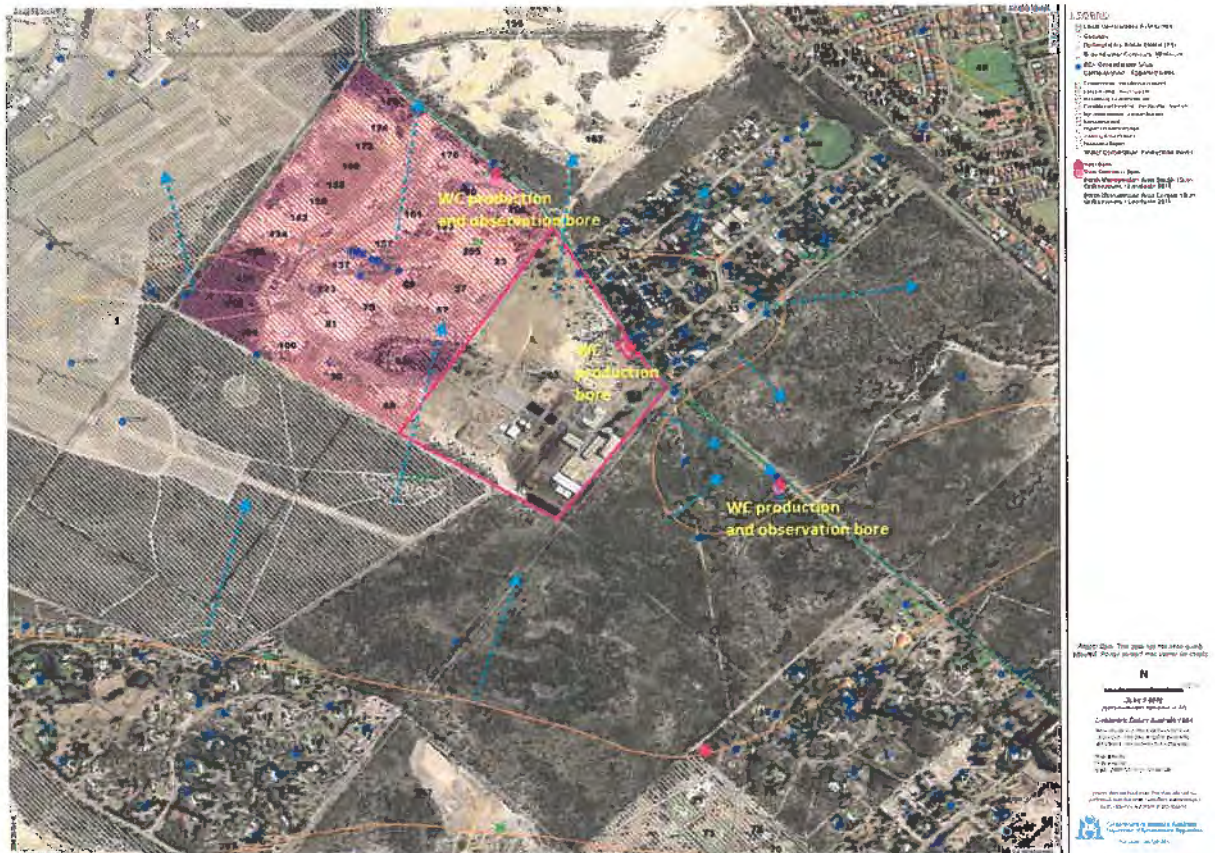
*The pink line depicts the Richgro Premises boundary*

The regional groundwater flow direction is depicted below in Figure 9:



**Figure 9: Regional groundwater flow** (image obtained online from *Perth Groundwater Map*)

Locally, there are a series of groundwater abstraction bores which alter the regional groundwater flow direction towards the abstraction bores from the drawing effects of the bores. The location of these bores and inferred local groundwater flow direction is depicted in Figure 10 below.



**Figure 10: Inferred groundwater flow and location of production bores**

Based on historical information provided by Richgro, it appears that the **Licence Holder** at that time considered the groundwater flow to be in a north-westerly direction. The **Delegated Officer's** assessment on the available groundwater data and the use of publically available sources such as the former Department of Water's *Perth Groundwater Map*, has identified that the local inferred groundwater flow is in an easterly to north-easterly direction as it is being influenced by the presence of abstraction bores as discussed above.

## 5.5 Soil type

*Perth Groundwater Map* identified Bassendean Sand as the dominant geological surface formation within the general area of the **Premises**. The soils in this formation consist of pale grey to white sands which are predominately medium grained, with layers of a friable, limonite-cemented sand commonly known as 'coffee rock' (McPherson and A. Jones, 2005 Geosciences Australia).

Borehole logs from the installation of two monitoring bores within the **Premises** in 2014 indicate a soil profile consisting predominantly of brown and white sands and coffee rock. Although the bore logs provided to the Department contained limited information (i.e. does not detail when groundwater was intersected), the results confirm that the soil profile is consistent with the Bassendean Sand profile.

## 5.6 Meteorology

### 5.6.1 Wind direction and strength

The following wind roses (Figure 11) provide the annual wind direction and strength (km/h) for the periods 9am and 3pm between the years 1988 to 2010 (most recent data available) The Bureau of Meteorology (**BoM**) provides the 9am and 3pm wind speed and direction for the Jandakot Aero WA station (station number 009172). The region has a dominant annual wind direction consisting of easterly winds during morning and south westerly and westerly winds in the afternoon. It is important to note that these wind roses shows historical wind speed and wind direction data for the Jandakot area and should not be used to predict future data.

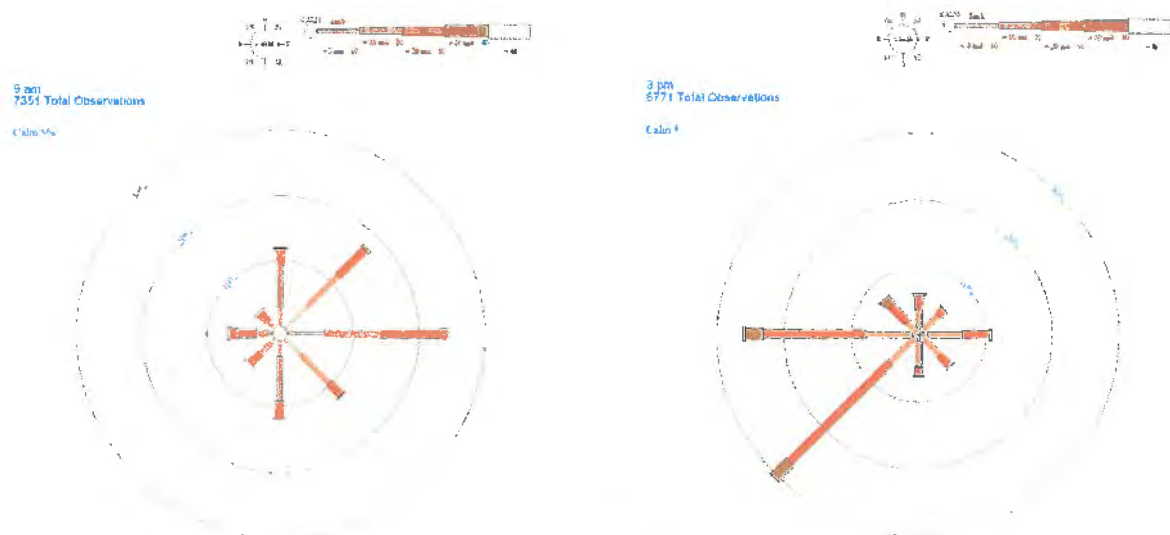
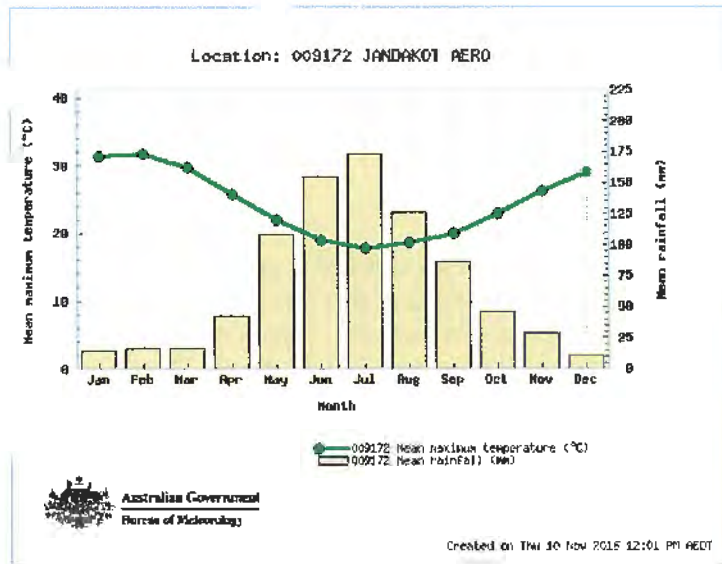


Figure 11: Wind rose for Jandakot Aero at 9am (1989 – 2010) and 3pm (1990 – 2010)

### 5.6.2 Rainfall and temperature

The Jandakot locality experiences mild wet winters and hot dry summers. Figure 12 shows the mean rainfall and maximum temperatures for Jandakot Aero (closest available weather

station) for the period 1961 - 1990. Jandakot receives a mean annual rainfall of approximately 824.3 mm.



**Figure 12: Mean rainfall and temperatures for Jandakot Aero**



## 6. Risk assessment

### 6.1 Confirmation of potential impacts

Identification of key potential emissions, pathways, receptors and confirmation of potential impacts are set out in Table 9 below. Table 9 identifies which potential emissions will be progressed to a full risk assessment. Some potential emissions/impacts may not receive a full risk assessment where a potential receptor or pathway cannot be identified or where the emission/impacts are regulated under a Ministerial Statement.

**Table 9. Identification of key emissions during operation**

		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
<b>Waste acceptance, handling and storage</b>	<i>Feedstock unloading and storage</i>	<i>Noise (from operational machinery including reversing beepers)</i>	<i>Nearest residential area located 105m west to north-west of prescribed activities</i>	<i>Air / wind dispersion</i>	<i>Impacts to amenity and wellbeing, nuisance</i>	Yes	<i>Please refer to risk assessment in Section 6.4</i>
	<i>Pre-treatment of feedstock (outside grinding/shredding of greenwaste)</i>		<i>Jandakot Airport located 560m south-west of prescribed activities</i>				
<b>Pre-treatment of waste</b>	<i>Pre-treatment of feedstock (destruction of packaged wastes/shredding of wastes inside receival hall)</i>						
<b>Composting process</b>							
<b>Biofilters</b>	<i>Composting process (formation windrows and turning operations)</i>		<i>Queensgate Drive Lake and parkland located 2.27km north-east of prescribed activities</i>	<i>Air / wind dispersion</i>	<i>Impacts to amenity and wellbeing</i>	No	<i>Receptors are at a significant distance from the Premises.  General provisions of the EP Act and the Environmental Protection (Noise) Regulations 1997 apply</i>
<b>Bagging station</b>	<i>Operation/fans on bio-filters</i>						

		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
	Electricity generation plant  Bagging of feedstock and composted/blended products including associated material handling		Sanctuary Waters lake and parkland located 2.37 km east north-east of prescribed activities	Air / wind dispersion	Impacts to amenity and wellbeing	No	Receptors are at a significant distance from the Premises.  General provisions of the EP Act and the Environmental Protection (Noise) Regulations 1997 apply
			Confirmed Carnabys Cockatoo Roost Areas located 2.4 km east of prescribed activities	Air / wind dispersion	Disruption to feeding and reproduction	No	Receptors are at a significant distance in the opposite direction of the prevailing winds
			Confirmed Carnabys Cockatoo Breeding Areas located 3.17 km east of prescribed activities				
Waste acceptance, handling and storage  Pre-treatment of waste  Composting process  Bagging station	Feedstock unloading and storage  Pre-treatment of feedstock (outside grinding/shredding of greenwaste)  Pre-treatment of feedstock (destruction of packaged wastes/shredding of wastes inside receipt hall)  Composting process (formation windrows and	Dust (including bioaerosols)	Nearest residential area located 105m west to north-west of prescribed activities  Jandakot Airport located 560m south-west of prescribed activities	Air / wind dispersion	Amenity impacts from visible dust and deposition on property.  Nuisance impacts  Health impacts associated with inhalation of particulates/bioaerosols	Yes	Please refer to risk assessment in Section 6.5
			Lukin Swamp Reserve (groundwater fed wetland) located 100m from prescribed activities	Air / wind dispersion	Degradation of surface water quality  Blocking photosynthesis in	Yes	Please refer to risk assessment in Section 6.5

		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
	<p>turning operations – excludes Anaerobic Digestion plant)</p> <p>Bagging of feedstock and composted/blended products and associated handling of materials</p>		Harrisdale Swamp located 2.5km south-east of prescribed activities		vegetation	No	Receptor is at a significant distance in the opposite direction of the prevailing winds
			Queensgate Drive Lake and parkland located 2.27km north-east of prescribed activities	Air / wind dispersion	Degradation of surface water quality	No	Receptors are at a significant distance from the Premises. General provisions of the EP Act apply
			Sanctuary Waters lake and parkland located 2.37 km east north-east of prescribed activities		Impacts to amenity and wellbeing Health impacts associated with inhalation of particulates/bioaerosols		
			Bush Forever areas located immediately adjacent to the eastern and southern boundary of the prescribed activities	Air / wind dispersion	Blocking photosynthesis in vegetation	Yes	Please refer to risk assessment in Section 6.5
			Confirmed Carnabys Cockatoo Roost Areas located 2.4km east of prescribed activities		Disruption to feeding and reproduction	No	Receptors are at a significant distance in the opposite direction of the prevailing winds
			Confirmed Carnabys Cockatoo Breeding Areas located 3.17km east of prescribed activities				

		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
<b>Waste acceptance, handling and storage</b>  <b>Pre-treatment of waste</b>  <b>Composting process</b>	Feedstock unloading and storage	Odour	Nearest residential area located 105m west to north-west of prescribed activities	Air / wind dispersion	Impacts to amenity and wellbeing	Yes	Please refer to risk assessment in Section 6.6
	Pre-treatment of feedstock (outside grinding/shredding of greenwaste)						
	Pre-treatment of feedstock (destruction of packaged wastes/shredding of wastes inside receival hall)		Jandakot Airport located 560m south-west of prescribed activities	Air / wind dispersion	Impacts to amenity and wellbeing	Yes	Please refer to risk assessment in Section 6.6
	Composting process (formation and turning of windrows, application of liquids to process, AD plant Leachate collection system)		Queensgate Drive Lake and parkland located 2.27km north-east of prescribed activities	Air / wind dispersion	Impacts to amenity and wellbeing	No	Receptors are at a significant distance from the Premises. General provisions of the EP Act apply
Bagging of feedstock and composted/blended products	Sanctuary Waters lake and parkland located 2.37 km east north-east of prescribed activities						
	AD Plant –biogas release						
	Electricity generation and flare– combustion gases						
	Pond desludging						
<b>Waste acceptance, handling and storage</b>  <b>Pre-treatment of waste</b>	Feedstock unloading and storage	Leachate: Seepage through herdstand areas and ponds; Damage/rupture of pond liner; Overtopping of	Groundwater: 3m below ground level within a P2 PDWSA, immediately adjacent to P1 PDWSA	Seepage through soil  Transport through groundwater	Contamination of groundwater and drinking water supply (PDWSA)	Yes	Please refer to risk assessment in Section 6.7
	Pre-treatment of feedstock (outside grinding/shredding of greenwaste)						
	Pre-treatment of feedstock (destruction of						

		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
<b>Composting process</b>	<p>packaged wastes/shredding of wastes inside receival hall)</p> <p>Composting process (formation and turning of windrows, application of liquids to process, AD plant Leachate collection system</p> <p>Bagging of feedstock and composted/blended products</p>	<p>ponds;</p> <p>Run-off from hardstand;</p> <p>AD Plant rupture/loss of containment</p>	<p>Groundwater (abstraction bore): Premises is within well-head protection zone for Water Corporation production bore (165m from prescribed activities)</p>	<p>Seepage through soil</p> <p>Transport through groundwater</p>	<p>Contamination of groundwater supply for nearby users</p>	Yes	<p>Please refer to risk assessment in Section 6.7</p>
			<p>Lukin Swamp Reserve (groundwater fed wetland) located 100m from prescribed activities</p>		<p>Contamination of surface waters at the point of groundwater expression</p>	Yes	<p>Please refer to risk assessment in Section 6.7</p>
			<p>Harrisdale Swamp located 2.5km south-east of prescribed activities</p>	<p>Seepage through soil</p>	<p>Contamination of surface waters at the point of groundwater expression</p>	No	<p>The receptor is located 2.5km up gradient from the <b>Premises</b>. Seepage is not considered likely to travel to this receptor</p>
			<p>Queensgate Drive Lake and parkland located 2.27km north-east of prescribed activities</p>	<p>Transport through groundwater</p>	<p>Contamination of surface waters at the point of groundwater expression</p>	No	<p>The receptor is located a significant distance from the <b>Premises</b>.</p>
			<p>Sanctuary Waters lake and parkland located 2.37km east north-east of prescribed activities</p>		<p>Contamination of surface waters at the point of groundwater expression</p>	No	<p>The receptor is located a significant distance from the <b>Premises</b>.</p>
			<p>Bush Forever areas located immediately adjacent to the eastern and southern boundary of the prescribed activities</p>		<p>Contamination of land (soil)</p> <p>Impacts to vegetation within Bush Forever areas</p>	Yes	<p>Please refer to risk assessment in Section 6.7</p>

		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning	
<p><b>Waste acceptance, handling and storage</b></p> <p><b>Pre-treatment of waste</b></p> <p><b>Composting process</b></p>	<p>Feedstock unloading and storage</p> <p>Composting process (formation windrows and turning operations – includes Anaerobic Digestion plant)</p> <p>Generation of electricity</p> <p>Product storage</p>	<p>Fires and explosions: particulates and gases including:</p> <p>Biogas</p> <p>Oxides of nitrogen</p> <p>Carbon monoxide</p> <p>Sulfur dioxide</p> <p>Volatile organic compounds</p> <p>Non-methane volatile organic compounds</p>	<p>Nearest residential area located 105m west to north-west of prescribed activities</p>	<p>Air (windborne): wind speed and direction can change the level of smoke generated.</p> <p>Seepage through soil</p> <p>Overland</p>	<p>Public health effects from inhaled particulates and gases</p> <p>Impacts to amenity and wellbeing</p> <p>Loss of life and/or property from explosions/fires</p> <p>Health impacts such as asphyxia</p> <p>Impacts on amenity and wellbeing from odour</p>	Yes	Please refer to risk assessment in Section 6.8	
			<p>Jandakot Airport located 560m south-west of prescribed activities</p>		<p>Public health effects from inhaled particulates</p> <p>Impacts to amenity and wellbeing</p> <p>Disruption to flight paths</p>	Yes	Please refer to risk assessment in Section 6.8	
			<p>Lukin Swamp Reserve (groundwater fed wetland) located 100m from prescribed activities</p>	<p>Air (windborne): wind speed and direction can change the level of smoke generated.</p>		<p>Contamination to surface water from drop out of ash and other particulates</p>	Yes	Please refer to risk assessment in Section 6.8
			<p>Harrisdale Swamp located 2.5km south-east of prescribed activities</p>	<p>Seepage through soil</p> <p>Overland</p>			No	Receptor is located a significant distance from the Premises
			<p>Queensgate Drive Lake and parkland located 2.27 km north-east of prescribed activities</p>					

		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
<b>Waste acceptance, handling and storage</b>  <b>Pre-treatment of waste</b>  <b>Composting process</b>	Feedstock unloading and storage	Fires and explosions: particulates and gases including: Biogas	Sanctuary Waters lake and parkland located 2.37 km east north-east of prescribed activities				
	Composting process (formation windrows and turning operations – includes Anaerobic Digestion plant)	Oxides of nitrogen Carbon monoxide Sulfur dioxide Volatile organic compounds Non-methane volatile organic compounds	Bush Forever areas located immediately adjacent to the eastern and southern boundary of the prescribed activities		Destruction to flora within Bush Forever areas	Yes	Please refer to risk assessment in Section 6.8
	Generation of electricity		Confirmed Carnabys Cockatoo Roost Areas located 2.4km east of prescribed activities		Destruction of breeding, feeding and roosting grounds	No	Receptors are at a significant distance away in the opposite direction of the prevailing winds
	Product storage		Confirmed Carnabys Cockatoo Breeding Areas located 3.17km east of prescribed activities	Air (windborne): wind speed and direction can change the level of smoke generated. Seepage through soil Overland	Destruction of breeding, feeding and roosting grounds	No	Receptors are at a significant distance away in the opposite direction of the prevailing winds
				Local air shed	Air / wind dispersion	Degradation to local air quality	Yes

		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
<b>Composting process</b>	Composting process (Anaerobic Digestion plant)  Generation of electricity	Point source emissions to air including:  Biogas  Oxides of nitrogen  Carbon monoxide  Sulfur dioxide  Volatile organic compounds  Non-methane volatile organic compounds	Nearest residential area located 105m west to north-west of prescribed activities	Air / wind dispersion	Public health effects from inhaled particulates and gases	Yes	Please refer to risk assessment in Section 6.9
			Impacts to amenity and wellbeing		Loss of life and/or property from explosions/fires		
			Jandakot Airport located 580m south-west of prescribed activities		Health impacts such as asphyxia	Impacts on amenity and wellbeing from odour	
			Lukin Swamp Reserve (groundwater fed wetland) located 100m from prescribed activities		Impacts to flora and fauna		
			Harrisdale Swamp located 2.5km south-east of prescribed activities		No	Receptor is located a significant distance from the Premises	
			Queensgate Drive Lake and parkland located 2.27 km north-east of prescribed activities		No	Receptor is located a significant distance from the Premises	
Sanctuary Waters lake and parkland located 2.37 km east north-east of prescribed activities		Impacts to flora and fauna					



		Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning	
<b>Composting process</b>	Composting process (Anaerobic Digestion plant)  Generation of electricity	Point source emissions to air including:  Biogas  Oxides of nitrogen  Carbon monoxide  Sulfur dioxide  Volatile organic compounds  Non-methane volatile organic compounds	Bush Forever areas located immediately adjacent to the eastern and southern boundary of the prescribed activities	Air / wind dispersion		Yes	Please refer to risk assessment in Section 6.9	
			Confirmed Carnabys Cockatoo Roost Areas located 2.4km east of prescribed activities		Impacts to fauna from air emissions	No	Receptor is located a significant distance from the Premises	
			Confirmed Carnabys Cockatoo Breeding Areas located 3.17km east of prescribed activities					
			Local air shed		Degradation to local air quality	Yes	Please refer to risk assessment in Section 6.9	
<b>Final product</b>	Blended and solid composted products removed from Premises  Digestate	Pathogens	End Users	Human contact with compost that may contain pathogens	Public health effects from inhaled or ingested pathogens	No	Product is not sold to small retail customers and digestate is either removed offsite for disposal or used in composting process where it undergoes pasteurisation	
<b>General housekeeping and site operations</b>	Leachate collection system	Mosquitoes	Nearest residential area located 105m west to north-west of prescribed activities	Air / wind dispersion / migration paths of pest	Public health and amenity impacts	Yes	Please refer to risk assessment in Section 6.10	

## 6.2 Risk Criteria

During the assessment the risk criteria in Table 10 below will be applied to determine a risk rating set out in this section 6.

**Table 10: Risk Criteria**

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

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

<sup>A</sup> Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting*.

\* In applying public health criteria, DWER may have regard to the Department of Health's, *Health Risk Assessment (Scoping) Guidelines* "on-site" means within the prescribed premises boundary.

### 6.3 Risk Treatment

DWER will treat risks in accordance with the Risk Treatment Matrix in Table 11 below:

**Table 11: Risk Treatment**

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

The emission types have been identified with the pathways and receptors in Table 9 above.

### 6.4 Risk Assessment - noise impacts on amenity and wellbeing

#### 6.4.1 General hazard characterisation and impact

Noise may be generated from the use of operational machinery, including reversing beepers, acceptance and unloading of waste and pre-treatment activities such as shredding/grinding of green waste and other feedstocks, turning of windrows, movement of materials around the **Premises**, bagging of feed stocks and composted/blended soil products and from the generation of electricity when gases are converted from the anaerobic digestion facility. Noise has the potential to cause nuisance impacts on the amenity and wellbeing of the public.

The **Delegated Officer's** review of noise emissions from the **Premises** (see section 4.3.2) identified that compliance with the Noise Regulations has not been demonstrated at the **Premises**. The **Delegated Officer** is also aware that some operations, particularly those relating to the bagging of products, are being undertaken during the night time hours in the Noise Regulations where the maximum assigned levels are lower.

Three complaints regarding noise emissions from the **Premises** have been received since June 2016. The City of Cockburn has raised concerns with DWER regarding the noise emitted from reversing beepers on vehicles.

A draft document titled *Richgro Garden Products, Environmental Aspects, Management Plan for: Odour, Noise (Traffic), Dust, Vermin* dated 25 June 2017 was submitted to DWER on 7 July 2017. This document has been considered in the review for noise emissions.

#### 6.4.2 Criteria for assessment

The *Environmental Protection (Noise) Regulations 1986* (Noise Regulations) specify the maximum assigned noise levels authorised to be emitted from a premises in relation to the

receiving receptors and siting.

The Noise Regulations  $L_{A10}$  assigned levels for a 'Noise sensitive premises: highly sensitive area', being an area used for a residential purpose, are applicable for noise emissions from Richgro and are specified as follows:

- 0700 to 1900 hours Monday to Saturday (referred to as day-time hours): 45 dB + influencing factor;
- 0900 to 1900 hours Sunday and public holidays: 40 dB + influencing factor;
- 1900 to 2200 hours all days: 40 dB + influencing factor; and
- 2200 to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays: 35 dB + influencing factor.

### 6.4.3 Proponent controls

Management actions undertaken by the **Licence Holder** to control noise emissions include:

- Construction of a sand ridge along the boundary of the green waste processing area;
- Installation of a muffler on the green waste shredder/grinder;
- The shredder is limited to operation between 9am and 4pm;
- Installation of 150mm cool-room panels on the inside of the Anaerobic Digestion receival Hall to assist in suppressing noise emissions while feedstocks are processed inside the hall;
- Croakers have been installed on all vehicles associated with the composting operations on the **Premises**;

### 6.4.4 Key findings

The **Delegated Officer** has reviewed the information regarding the noise impacts from the **Premises** and has found:

1. *Compliance with the Noise Regulations has not been demonstrated;*
2. *Some operations on the **Premises** are currently taking place during the night time hours specified in the Noise Regulations where assigned levels are lower;*
3. *The 2017 acoustic assessment identified compliance with the Noise Regulations for all operations and equipment except for the green waste shredder/grinder;*
4. *The **Licence Holder** has proposed a new location for the green waste shredder/grinder which meets compliance with the Noise Regulations during day-time hours.*
5. *Restrictions on the hours of operation for the shredder/grinder are required to ensure compliance with the Noise Regulations during night time hours.*

### 6.4.5 Consequence

Based upon the sensitivity of residential receptors in close proximity to the **Premises**, the findings of the acoustic assessment (2017) and the **Licence Holder's** controls, the **Delegated Officer** has determined that the Noise Regulations are likely to be met and residences may experience low-level impact to amenity from noise emissions. Therefore, the **Delegated Officer** considers the consequence of noise emissions from the **Premises** to be **minor**.

#### 6.4.6 Likelihood of consequence

Based upon the *Licence Holder's* controls and proximity to residences the *Delegated Officer* has determined that the minor consequence of noise impacts will probably occur in most circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **likely**.

#### 6.4.7 Overall rating

The *Delegated Officer* has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 11) and determined that the overall rating for the risk of noise emissions on sensitive receptors during operation is **medium**.

### 6.5 Risk Assessment – dust and bioaerosol impacts on amenity, wellbeing, health and environment

#### 6.5.1 General hazard characterisation and impact

Dust may be generated from the unloading/loading of feedstocks and products, grinding of green waste and shredding of waste in the Anaerobic Digestion (AD) facility, during the production of compost and soil blends through turning windrows, and dust lift-off from vehicle movements. Dust has the potential to impact public health and affects both the respiratory and cardiovascular systems following both long and short term exposures. Dust may also cause nuisance impacts on the amenity of properties.

Dust impacts to surface water may cause an increase in the suspended solids within the water and impact on the water quality.

Bioaerosols can be released from activities such as shredding, turning and screen of waste and windrows at composting facilities however the stage of the composting and the moisture content of the material can influence bioaerosol emissions.

Exposure to bioaerosols has been associated with human health effects such as inflammation of the respiratory system, coughs and fever. Inhalation of bioaerosols may exacerbate respiratory diseases and cause gastrointestinal illness, eye irritation and dermatitis.

A draft document titled *Richgro Garden Products, Environmental Aspects. Management Plan for: Odour, Noise (Traffic), Dust, Vermin* dated 25 June 2017 was submitted to DWER on 7 July 2017. This document has been considered in the review for dust emissions.

#### 6.5.2 Criteria for assessment

The relevant criteria for assessment of dust emissions as  $PM_{10}$  is  $50\mu\text{g}/\text{m}^3$  over 24 hours as specified in the National Environment Protection (Ambient Air Quality) Measure (NEPM). The NEPM is the relevant criteria for assessment in relation to human health and wellbeing.

There are no published Australian assessment criteria for bioaerosols. The *Delegated Officer* considers that the criteria of 300, 1000 and 500 CFU  $\text{m}^{-3}$  for gram negative bacteria, total bacteria and *Aspergillus fumigatus* respectively adopted in the UK is appropriate to adopt at the Richgro premise.

Amenity impacts can be also be assessed against the general provisions of the EP Act, specifically whether fugitive dust unreasonably interferes with the health, welfare, convenience, or comfort of any person.

### 6.5.3 Proponent controls

The Proponent's controls to reduce and manage dust (including bioaerosols) emissions are set out in Table 12:

**Table 12: Proponent controls for dust**

Control	Description	Operation details	Reference to Issued Licence Plan (Attachment 1)
<b>Controls for dust</b>			
Asphalt hardstand	The outdoor composting area and trafficable roads are comprised of an asphalt hardstand	24 hour operation	Site Map
Limestone pad	The greenwaste storage and processing area is comprised of a limestone hardstand	24 hour operation	
Mobile water sprinklers	Mobile sprinklers are rotated throughout the outdoor windrows to assist in reducing fugitive dust emissions	As required	
Fixed water sprinklers	Fixed sprinklers are located alongside the product storage shed to assist in reducing fugitive dust emissions from outdoor composting windrows	As required	
Water cart	12,000L capacity used to suppress fugitive dust emissions from trafficable areas and outdoor compost windrows and feedstock	As required	
Sprinkler system on screener	Assists in suppressing dust emissions while screener is in use	Used at all times when screener is in operation	
Sprinkler system on greenwaste grinder	Assists in suppressing dust emissions while grinder is in use	Used at all times when in operation	
Bagging station is inside an enclosed building	Enclosed building fitted with a dust extraction unit	Undertaken within enclosed building at all times when bagging station is operational	
AD plant receival hall is an enclosed building	Fitted with air extraction system and automated closing doors	24 hour operation	

Windsocks are also installed onsite to allow for staff to observe wind direction and obtain an overview of wind speed. Standard Operating Procedures are in place in regards to when dust mitigation measures should be implemented.

#### 6.5.4 Key findings

**The Delegated Officer has reviewed the information regarding the dust and bioaerosol impacts from the Premises and has found:**

1. *Dust emissions including bioaerosols have the potential to impact on the health and amenity of receptors.*
2. *DWER officers attending site visits did not observe visible dust leaving the Premises however visible dust emissions were identified from the bagging station which has not previously been regulated under Part V of the EP Act.*
3. *DWER has received four complaints since December 2013 in regards to dust emissions.*
4. *Dust sampling and analysis undertaken by the City of Cockburn did not identify any contaminants in dust considered as harmful to health.*
5. *Conditioning regulatory controls in the licence will be considered subject to the below risk assessment.*

#### 6.5.5 Consequence

##### Residential communities (amenity and health impacts)

Based upon the sensitivity of residential receptors in close proximity to the **Premises** the **Delegated Officer** has determined that the Specific Consequence Criteria detailed in section 6.5.2 are at risk of not being met at nearby residences. Therefore, the **Delegated Officer** considers the consequence of dust emissions (including bioaerosols) from the **Premises** to be **moderate**.

##### Lukin Swamp Reserve (environmental impacts)

Based upon the sensitivity of this environmental receptor in close proximity to the **Premises**, the **Delegated Officer** has determined that off-site local environmental impacts are low level. Therefore, the **Delegated Officer** considers the consequence of dust emissions (including bioaerosols) from the **Premises** to be **moderate**.

#### 6.5.6 Likelihood of consequence

##### Residential communities

Based upon the **Licence Holder's** controls, proximity to residences and Jandakot airport and consideration that these receptors are in the direction of the prevailing wind, the **Delegated Officer** has determined that the moderate consequence of dust impacts could occur at some time. Therefore, the **Delegated Officer** considers the likelihood to be **possible**.

##### Lukin Swamp Reserve

Based upon the **Licence Holder's** controls, proximity to this receptor and location within the direction of the prevailing wind, the **Delegated Officer** has determined that the moderate consequence of dust impacts will probably not occur in most circumstances. Therefore, the **Delegated Officer** considers the likelihood to be **unlikely**.

#### 6.5.7 Overall rating

##### Residential communities

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

## Lukin Swamp Reserve

The **Delegated Officer** has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 9) and determined that the overall rating for the risk of dust emissions on Lukin Swamp during operation is **medium**.

## 6.6 Risk Assessment – odour impacts on amenity and wellbeing

### 6.6.1 General hazard characterisation and impact

Individual responses to odour emissions may vary depending on age, health status, sensitivity, and odour exposure patterns. Perceived odour intensity may increase or decrease on exposure. Community response to an odour can include annoyance, potentially leading to stress, and loss of amenity. Exposure to repeated odour events can create a nuisance effect. Exposure times and frequency of odour emissions depend on day to day activities and weather conditions.

The sources of odour within the **Premises** are:

- Feedstock unloading and storage
  - The **Licence Holder** receives and stores green waste, sawdust and pine bark outdoors. The **Licence Holder** also accepts and stores waste fruit, vegetables and food, including alcoholic and non-alcoholic beverages, into the receival hall, and liquid wastes into the AD mixing tank.
- Outdoor pre-treatment of feedstock
  - Green waste is processed outside in grinders.
- Indoor pre-treatment of feedstock
  - The **Licence Holder** shreds packaged wastes and food wastes before including to the mixing tank of the AD plant. Air within the receival hall is under negative pressure and is captured by an exhaust system which directs the air to a biofilter. During site visits, DWER officers identified that the biofilter tarpaulin was not completely secured around the biofilter allowing some odorous air to escape into the environment. The **Licence Holder** has since advised that the tarpaulin has been secured. This will be confirmed by DWER Officers during the next site visit.
- Outdoor compost windrows
  - The **Licence Holder** forms compost in open-air windrows. During the creation of the compost piles windrows, treated leachate/stormwater from Pond 4 is added to maintain the desired moisture content. During this activity any excess leachate flows over the hardstand area into the leachate ponds. The compost piles are turned as required to promote aeration.
- Indoor compost windrows
  - As authorised as part of this licence review, green waste will be blended with digestate within the Composting Shed. Air within this shed is under negative pressure and is captured by an exhaust system which directs the air to two biofilters.
  - If the indoor compost mix has not achieved sufficient stability prior to being removed from the Composting Shed for outdoor maturation, odours may be generated.
- Anaerobic Digestion plant



- Food wastes and liquid wastes are processed in an in-vessel AD plant.
- The works approval assessed the inclusion of all wastes into the AD process within 24 hours of being received. As part of the **Licence Holder's** comments on the draft documents, it was proposed that with all wastes are included into the process within 48 hours of receipt to allow sufficient time to process bulk wastes received onsite.
- Leachate collection system
  - The **Licence Holder** has four ponds for combined leachate and storm water storage. Leachate applied on the outdoor compost windrows and leachate generated from the compost process drains towards ponds 1, 2 and the main pond. This has the potential to create a large surface area of leachate over the hardstand area. Sumps with sediment traps are fitted on ponds 1, 2 and the main pond where a large percentage of the solid matter is removed.
  - Ponds 1 and 2 drain to Pond 3 where it passes through a sand filtration and chlorine dosing system before being pumped to Pond 4. Water from Pond 4 is re-used in the composting process as a substitute to digestate application, which was previously being applied to the green waste and pine bark compost streams.
  - DWER officers did not detect odours from the ponds at the time of site visits/inspections when aerators were in use.
- Bagging station
  - Compost products are bagged onsite.
- Desludging of ponds
  - Sludge within ponds is generally high in nutrients and BOD. Desludging of ponds can be undertaken by different methods which impact on the level of odour emitted during the process.

It is noted that the groundwater abstraction bores are in close proximity to the **Premises** and sensitive receptors. Groundwater in the vicinity has been identified as containing elevated sulphate levels which may contribute to odours being emitted when bores are used in the area. Additionally, the Lukin Swamp is located adjacent to the **Premises** boundary which may also be a source of odour.

Based on the works approval supporting documentation, residence time for feedstock within the AD tanks should be between 15 to 20 days. The **Delegated Officer** has noted that the **Licence Holder** advises they operate with a residence time of 30 days.

During site visits and correspondence between DWER officers and the **Licence Holder**, the AD tanks are continually fed and digestate is continually drawn from the process. It is possible that feedstocks may not be retained within the tanks for a sufficient length of time. This may result in an incomplete breakdown of the feedstocks causing increased odours in the digestate.

The application of digestate on outdoor windrows had been undertaken on the **Premises** up until 1 April 2017. To determine the acceptability of the operation, the risk assessment has been undertaken on the basis that Richgro would like to use digestate in their outdoor composting operations and/or as part of an indoor composting process in the composting shed which contains an odour treatment system.

The information available to DWER on digestate and its application is limited. In the absence of comprehensive information for odour emissions management for the use of digestate, a conservative assessment has been undertaken.

As per SOP3A.03, the Licence Holder proposes to apply digestate to green waste in a mechanical mixing vessel and once the required C: N ratio and moisture contents have been achieved, transport the mixture into the Composting Shed. Aeration occurs through the use of a front end loader removing green waste from one bay and placing into an adjacent empty bay. The Licence Holder has proposed that three bays will be in use at any one time with one bay free to accommodate the turned compost mix.

SOP3A.03 states that moisture levels will be maintained between 55-65% WW and that windrows will be regularly turned. Once the compost has achieved a minimum three readings of 55°C within a two week period, the compost will be removed outside for maturation.

The Delegated Officer considers that SOP3A.03 lacks sufficient detail in regards to what other standards the compost must achieve prior to being placed outside i.e. there does not appear to be any proposed parameters to be achieved, other than temperature, to demonstrate 'compost stability', and no justification provided to demonstrate how this relates to potential odour emissions.

DWER does not have information in regards to pond desludging activities and the different methods of desludging impact on the level of odours emitted. The Delegated Officer has also undertaken a conservative assessment in regards to desludging activities. It is noted that desludging is not part of ongoing operations and will only be undertaken as required.

DWER received from the City of Cockburn (City), a draft document titled *Richgro Garden Products Environmental and Site Operations*, prepared by EVA Environmental, which had been provided to the City as part of their own enquiries with Richgro. The information within this report has been considered by the Delegated Officer.

The EVA Environmental report referred to an Odour Management Plan within Richgro's Environmental Aspects Management Plan (EAMP). A draft document titled *Richgro Garden Products, Environmental Aspects, Management Plan for: Odour, Noise (Traffic), Dust, Vermin* dated 25 June 2017 was submitted to DWER on 7 July 2017. This document has been considered in regards to odour emissions.

## 6.6.2 Criteria for assessment

Amenity impacts can be assessed against the general provisions of the EP Act, specifically whether odour unreasonably interferes with the health, welfare, convenience, or comfort of any person.

## 6.6.3 Proponent controls

The Proponent's controls to reduce and manage odour emissions are set out in Table 13:

**Table 13: Proponent controls for odour**

Source	Site Infrastructure	Operation details	Reference to Issued Licence Plan (Attachment 1)
Waste unloading and storage (AD Plant)	Closed system receival tank	Odorous liquid wastes are directly connected and unloaded from the truck to the mixing tank	Site Map

Waste unloading and storage (AD plant)  Indoor pre-treatment of feedstock	Receival hall fitted with automatic closing doors and exhaust system	The receival hall has an automatic closing door to prevent escape of odorous air. The building is under negative pressure and connected to an air exhaust system
Waste unloading and storage (AD plant)  Indoor pre-treatment of feedstock	Biofilter	Air from the receival hall and mixing tank is directed to a biofilter consisting of 320m <sup>3</sup> spongelite (fossilised sea sponges comprised predominantly of silica) biofilter bed and a 7m Stack.
Waste unloading and storage (composting shed)  Application of digestate  Composting operation	Composting shed fitted with automated roller doors and exhaust system	The composting shed has been fitted with roller doors at each access point to prevent escape of odorous air. The building is under negative pressure and connected to an air exhaust system.
Waste unloading and storage (composting shed)  Application of digestate  Composting operation	Biofilter	Air from the receival hall and mixing tank is directed to 2 biofilters consisting of 320m <sup>3</sup> spongelite (fossilised sea sponges comprised predominantly of silica) biofilter bed.
Indoor pre-treatment of feedstock  AD plant	Closed system mixing tank and dosing tank	Air from these tanks is suctioned out and transported to the biofilter for treatment
AD plant	Closed system AD tanks	Gas within the AD tanks is directed to the power generator or via flare for combustion
Leachate pond	Aerator(s)	Each of the leachate ponds is fitted with aerators
Bagging station	Dust extraction unit	Air from the bagging station is suctioned out and dispersed out of the building.

Management actions undertaken by the **Licence Holder** to control odour emissions include:

- Standard Operating Procedures are followed at the **Premises** to assist in implementing the above and below odour mitigation measures.
- Windrows are turned immediately after liquid (treated leachate/stormwater or previously digestate) is applied and are regularly turned to maintain aerobic conditions;
- The **Licence Holder** monitors wind direction through the use of two windsocks on the **Premises** and will cease odour generating activities (i.e. applying liquid, turning windrows) when wind direction is towards sensitive receptors;
- Feedstocks for the Anaerobic Digestion (AD) facility are accepted into an enclosed receival hall which operates under negative pressure with an extraction system directing air to a biofilter where air passes through the spongelite medium before being emitted via a stack;
- All wastes accepted in the AD process within 48 hours of being received;
- Digestate application will be limited to the indoor composting shed which operates under negative pressure and is connected to a biofilter system. The composting shed has rapid close doors.
- The AD tanks are fully sealed and connected to a closed loop gas collection system for electricity generation.
- Pressure detectors have been installed on the AD plant to warn the occupier when pressure in the tanks is too high, allowing gas to be discharged via the flare if required.
- The AD plant is fitted with an enclosed gas flare to allow for the treatment of odorous gases in the event that the power generators are offline.
- Equipment and machinery is regularly serviced and maintained.

#### 6.6.4 Key findings

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

1. *Odour emissions have the potential to impact the amenity and wellbeing of sensitive receptors.*
2. *A significant number of odour complaints were received during the 2016-2017 financial year in relation to odour emissions.*
3. *Odour complaints were not received at the Premises prior to August 2015.*
4. *The application of digestate onto outdoor composting windrows appears to be a significant source of odour from the Premises and has resulted in impacts at nearby sensitive receptors;*
5. *Digestate has not been applied to the composting process since 1<sup>st</sup> April 2017.*
6. *During a site visit on 2 May 2017, DWER Officers identified that the biofilter servicing the AD Plant may not be sealed and may be a source of odour.*
7. *Removal of indoor compost from the composting shed to outside for maturation may be a source of odour if the compost has not achieved biological stability.*
8. *Conditioning regulatory controls in the licence will be considered subject to the below risk assessment.*

### 6.6.5 Consequence

Based upon the sensitivity of residential receptors in close proximity to the *Premises*, the *Delegated Officer* has determined that residences may experience high level impact to amenity from odour emissions. Therefore, the *Delegated Officer* considers the consequence of odour emissions from the *Premises* to be **major**.

### 6.6.6 Likelihood of consequence

#### Unloading/loading and storage of feedstock

Based upon the *Licence Holder's* controls, proximity to residence, prevailing wind direction, and evidence obtained during DWER site investigations and site visits, the *Delegated Officer* has determined that the consequence of odour impacts will probably not occur in most circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **unlikely**.

#### Receival Hall in Anaerobic Digestion facility (pre-treatment of waste)

Based upon the *Licence Holder's* controls, proximity to residences, prevailing wind direction, the high number of odour related complaints received by DWER, and evidence obtained during DWER site investigations and site visits, the *Delegated Officer* has determined that the consequence of odour impacts from this source would probably not occur in most circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **unlikely**.

#### Biofilter in Anaerobic Digestion facility (pre-treatment of waste)

Based upon the *Licence Holder's* controls, proximity to residences, prevailing wind direction, the high number of odour related complaints received by DWER, and evidence obtained during DWER site investigations and site visits, the *Delegated Officer* has determined that the consequence of odour impacts from this source would probably not occur in most circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **unlikely**.

#### Outside pre-treatment of feed stock (shredding of green waste)

Based upon the *Licence Holder's* controls, proximity to residences, prevailing wind direction, the high number of odour related complaints received by DWER, and evidence obtained during DWER site investigations and site visits, the *Delegated Officer* has determined that the consequence of odour impacts from this source may only occur in exceptional circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **rare**.

#### Outside compost manufacturing (including application of digestate)

Based upon the *Licence Holder's* controls, proximity to residences, prevailing wind direction, the high number of odour related complaints received by DWER, and evidence obtained during DWER site investigations and site visits, the *Delegated Officer* has determined that the consequence of odour impacts would probably occur in most circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **likely**.

#### Outside compost manufacturing (without applying digestate)

Based upon the *Licence Holder's* controls, proximity to residences, prevailing wind direction, the reduction of odour related complaints received by DWER since digestate application ceased, and evidence obtained during DWER site investigations and site visits, the *Delegated Officer* has determined that the consequence of odour impacts will probably not occur in most circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **unlikely**.

#### Indoor composting (application of digestate)

Based upon the *Licence Holder's* controls, proximity to residences, prevailing wind direction, the high number of odour related complaints received by DWER when digestate was being applied outside, and evidence obtained during DWER site investigations and site visits, the *Delegated Officer* has determined that the consequence of odour impacts would probably not

occur in most circumstances. Therefore, the **Delegated Officer** considers the likelihood to be **unlikely**.

#### AD Tanks

Based upon the **Licence Holder's** controls, proximity to residences, and expert technical advice received in regards to the AD plant, the **Delegated Officer** has determined that the consequence of odour impacts from this source may only occur in exceptional circumstances. Therefore, the **Delegated Officer** considers the likelihood to be **rare**.

#### Leachate ponds

Based upon the **Licence Holder's** controls, proximity to residences, prevailing wind direction, and the high number of odour related complaints received by DWER, the **Delegated Officer** has determined that the consequence of odour impacts from this source (if digestate was being applied and draining into the ponds) could occur at some time. Therefore, the **Delegated Officer** considers the likelihood to be **possible**.

#### Bagging station

Based upon the **Licence Holder's** controls, proximity to residences, prevailing wind direction, and the high number of odour related complaints received by DWER, the **Delegated Officer** has determined that the consequence of odour impacts from this source will probably not occur in most circumstances. Therefore, the **Delegated Officer** considers the likelihood to be **unlikely**.

#### Pond desludging

Based upon the **Licence Holder's** controls, proximity to residences, prevailing wind direction, and the high number of odour related complaints received by DWER, the **Delegated Officer** has determined that the consequence of odour impacts from this source will probably only occur in exceptional circumstances. Therefore, the **Delegated Officer** considers the likelihood to be **rare**.

### 6.6.7 Overall rating

#### Unloading/loading and storage of feedstock

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

#### Receival Hall in Anaerobic Digestion facility

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

#### Biofilter in Anaerobic Digestion facility (pre-treatment of waste)

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

#### Outside pre-treatment of feed stock (shredding of green waste)

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

#### Outside compost manufacturing (including application of digestate)

The **Delegated Officer** has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 9) and determined that the overall rating for the risk of odour

emissions on sensitive receptors during operation is **high**.

#### Outside compost manufacturing (without applying digestate)

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

#### Indoor composting (application of digestate)

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

#### AD Tanks

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

#### Leachate ponds

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

#### Bagging station

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

#### Pond desludging

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

## 6.7 Risk Assessment – Leachate

### 6.7.1 General hazard characterisation and impact

There are no point source emissions of leachates to surface water or groundwater associated with the operation of the **Premises**. However, unintended leachate emissions high in nutrients may arise.

Emissions of leachate directly to soils onsite may result in seepage or overland flow to groundwater or adjoining land. Surface geology at the **Premises** is predominantly Bassendean Sand with soils consisting of consist of pale grey to white sands which are predominately medium grained, with layers of a friable, limonite-cemented sand commonly known as 'coffee rock' (McPherson and A. Jones, 2005 Geosciences Australia). These soil types are conducive to a permeable soil profile with a higher hydraulic conductivity likely to allow the migration of leachate to groundwater.

Groundwater monitoring data undertaken by the **Licence Holder** as part of the licence requirements has identified groundwater at a depth of 3 metres below ground level (mbgl) which means that any leachate seepage would reach groundwater quickly. This may result in the contamination of the soils and groundwater supply for nearby users.

The **Premises** is within a Priority 2 Public Drinking Water Source Area (PDWSA) and is immediately adjacent to a Priority 1 PDWSA. PDWSA's are proclaimed water sources under

the *Metropolitan Water Supply, Sewerage and Drainage Act 1909*. DWER's GIS mapping system indicates that groundwater in the area may have a total dissolved solids (TDS) concentration between 0 – 500 mg/L, and is considered to be fresh. Therefore the groundwater is considered a receptor of beneficial use as it is currently used for drinking water and is also suitable for other domestic use such as irrigation.

The **Premises** is also partly located in a well-head protection zone for Water Corporation production bore J130, which is immediately adjacent to the prescribed **Premises** boundary in an area annexed to the northern boundary, likely to be hydraulically downgradient of operations.

Regional groundwater flow direction is generally northerly however the inferred groundwater flow within the immediate vicinity of the **Premises** is likely easterly to north-easterly due to the influence of production bores in the area.

Rising groundwater, the result of mounding, has the potential to intercept the root zone of native vegetation. This may lead to an oversaturation of soils and/or accumulation of salts that can impact the growth of native vegetation.

The pathway for emissions to surface water may be via overland flow or within groundwater flow. Contaminated groundwater may be expressed within the Lukin Swamp Reserve and may impact on vegetation within the Bush Forever areas.

The expression of contaminated groundwater in surface water bodies may result in eutrophication and the excessive growth of algae. Algae growth may impact the survival of existing organisms through light and oxygen restriction and cause the degradation of the surface water value and beneficial use. Indirectly, odours may be generated from the eutrophication of surface waters creating a public nuisance. Impacts of contaminated groundwater on flora may result in plant deaths.

Elevated nitrogen, ammonium and sulfate ion concentrations have progressively increased over the past 16 years. The likely cause of the nutrient elevations is from the oxidation of sediments in the Lukin Swamp Reserve (wetland) leaching into groundwater due to the over abstraction of production bores in vicinity of the **Premises**.

The Lukin Swamp Reserve is located 100m from the prescribed **Premises** operations and is a groundwater fed wetland as well as being a catchment area for runoff from the surrounding areas. DWER has reviewed available groundwater data which is detailed in Sections 4.3.3 and 6.4, and expert reports have been attached to this document (Appendices 4 and 5).

### Sources

Emissions of leachate and liquid wastes may occur from the following sources summarised in Table 14.

**Table 14: Potential sources of leachate emissions.**

Source	Potential event
Feedstock Storage	<ul style="list-style-type: none"> <li>• Contaminated surface runoff</li> <li>• Leaching through hardstand</li> </ul>
Pre-treatment	
Composting	



Source	Potential event
Leachate collection system	<ul style="list-style-type: none"> <li>• Contaminated surface runoff</li> <li>• Leaching through hardstand</li> <li>• Overtopping of ponds</li> <li>• Liner damage/faults</li> </ul>

The predominant feedstocks used in the outside windrows are green waste, sawdust or pine bark, which are not likely to generate large quantities of leachate. However, any application of digestate or re-use water to these windrows is likely to increase the leachate run-off from these areas. Liquid wastes received onsite also have the potential to generate significant quantities of leachate in the event of spills. Leachates from composting operations are generally high in phosphate, nitrogen and ammonia.

### 6.7.2 Criteria for assessment

The Australian Drinking Water Guidelines (ADWG) developed by the National Health and Medical Research Council (NHMRC) are the most appropriate assessment criteria given the **Premises'** location within a PDWSA. Where the ADWG do not specify an assessment level, the ANZECC guidelines should be considered as an alternative assessment criterion to assess the potential impact on groundwater and surface water. The ADWG specifies an aesthetic value of 0.5 mg/L for ammonia and the ANZECC guidelines specify an investigation level of 2000 µg/L (2 mg/L) for total nitrogen.

### 6.7.3 Proponent controls

The majority of the site is sealed with an asphalt hardstand area which is laid to a fall to drain into high-density polyethylene (HDPE) lined leachate ponds. The green waste processing area is underlain by a limestone hardstand which is also laid to a fall to drain into the lined ponds. All feedstocks are stored and processed on the outside hardstand areas or on concrete floors within the enclosed receival hall of the Anaerobic Digestion plant.

The bays within the composting shed are sealed with all leachate retained within the bays. Richgro expect any residual leachate to be absorbed by green waste which is placed in the bays to be mixed with digestate as part of the indoor composting process.

The leachate ponds have been constructed with 1.5mm HDPE liner in in-situ sands. DWER holds limited information regarding construction of the ponds however based on the available information, the base of the leachate ponds are likely to be situated below the water table for six months of the year. The oldest pond was constructed in 2002 and Pond 3 was constructed in 2016. The Proponent's infrastructure controls for leachate management are set out in Table 15:

**Table 15: Proponent controls for leachate**

Site Infrastructure as referenced in the <i>Premises</i> Map (Attachment 1)	Description	Operation details
Asphalt hardstand	The outdoor composting area and trafficable roads are comprised of an asphalt hardstand	24 hour operation
Limestone pad	The greenwaste storage and processing area is comprised of a limestone hardstand	24 hour operation

Site Infrastructure as referenced in the <i>Premises</i> Map (Attachment 1)	Description	Operation details
Leachate pond 1	The leachate ponds are each lined with 1.5mm HDPE liner with provision for freeboard.	24 hour operation
Leachate pond 2		
Main pond		
Pond 3		
Composting shed	The composting shed is sealed with concrete.	24 hour operation

#### 6.7.4 Key findings

The *Delegated Officer* has reviewed the information regarding the leachate impacts from seepage from the *Premises* and has found:

1. The storage and handling of feedstocks, composts, liquid wastes and leachate have the potential to impact groundwater and surface water quality if not appropriately contained.
2. The soil type at the *Premises* is readily permeable and groundwater is located approximately 3 metres below ground level.
3. Groundwater below and in the vicinity of the *Premises* is considered a receptor as it is used as a drinking water resource, is part of a Public Drinking Water Source Area and partly within a well-head protection zone.
4. The bitumen and limestone hardstands on the *Premises* generally appear to be in good condition.
5. Leachate ponds are lined however there have been no integrity tests undertaken on the liners.
6. Based on available information, the base of the leachate ponds may be situated within groundwater for six months of the year and uplifting of the liner may occur if there is insufficient liquid within the pond to provide the relevant pressure to prevent uplift.
7. Groundwater monitoring at the *Premises* to date indicates an increasing trend in ammonium and sulfate ions.
8. DWER's Technical Expert Report (section 4.3.3 above) indicates that the increase in ions is likely from the result of over abstraction rather than site operations.
9. Conditioning regulatory controls in the licence will be considered subject to the below risk assessment.

#### 6.7.5 Consequence

##### Groundwater – Public Drinking Water Source Areas (health impacts)

###### Normal operations

Based upon the quality of the groundwater and the beneficial use as a Priority 1 and Priority 2 drinking water source, the *Delegated Officer* has determined that the impact to groundwater

from small scale leachate seepage could cause the specific consequence criteria to be exceeded and may pose mid-level impacts to health if contaminated groundwater is ingested. Contamination of this receptor may impact on amenity of residences surrounding the **Premises** that may be prevented from using their bores for both drinking and domestic use. Therefore, the **Delegated Officer** considers the consequence to be **major**.

#### **Foreseeable event (liner failure)**

Based upon the quality of the groundwater and the beneficial use as a Priority 1 and Priority 2 drinking water source, the **Delegated Officer** has determined that the impact to groundwater from leachate seepage in the event of liner failure could cause the specific consequence criteria to be significantly exceeded and may pose mid-level impacts to health if contaminated groundwater is ingested. Contamination of this receptor may impact on amenity of residences surrounding the **Premises** that may be prevented from using their bores for both drinking and domestic use. Therefore, the **Delegated Officer** considers the consequence to be **severe**.

#### **Lukin Swamp Reserve (environmental impacts)**

##### **Normal operations**

Based upon the local significance of this environmental receptor and the fact that it is groundwater fed, the **Delegated Officer** has determined that impacts to water quality and vegetation within this receptor from the small scale seepage of leachate could have low-level off-site local impacts. Therefore, the **Delegated Officer** considers the consequence to be **moderate**.

##### **Foreseeable event (liner failure)**

Based upon the local significance of this environmental receptor and the fact that it is groundwater fed, the **Delegated Officer** has determined that impacts to water quality and vegetation within this receptor from a liner failure event could have mid-level off-site local impacts with the specified consequence criteria exceeded. Therefore, the **Delegated Officer** considers the consequence to be **major**.

### **6.7.6 Likelihood of consequence**

#### **Groundwater – Public Drinking Water Source Areas**

##### **Normal operations**

Based upon the **Licence Holder's** controls, proximity to the receptor, surface geology, and readily available pathway, the **Delegated Officer** has determined that the major consequence of groundwater contamination from leachate seepage could occur at some time. Therefore, the **Delegated Officer** considers the likelihood to be **possible**.

##### **Foreseeable event (liner failure)**

Based upon the **Licence Holder's** controls, proximity to the receptor and surface geology, the **Delegated Officer** has determined that the severe consequence of groundwater contamination from leachate seepage due to liner failure would probably not occur in most circumstances. Therefore, the **Delegated Officer** considers the likelihood to be **unlikely**.

#### **Lukin Swamp Reserve**

##### **Normal operations**

Based upon the **Licence Holder's** controls, proximity to this receptor, surface geology and the inferred groundwater flow away from this receptor, the **Delegated Officer** has determined that the consequence of impacts from leachate seepage may only occur in exceptional circumstances. Therefore, the **Delegated Officer** considers the likelihood to be **rare**.

#### Foreseeable event (liner failure)

Based upon the *Licence Holder's* controls, proximity to this receptor, surface geology and the inferred groundwater flow away from this receptor, the *Delegated Officer* has determined that the consequence of impacts from leachate seepage due to liner failure would only occur in exceptional circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **rare**.

### 6.7.7 Overall rating

#### Groundwater – Public Drinking Water Source Areas

##### Normal operations

The *Delegated Officer* has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 93) and determined that the overall rating for the risk of leachate seepage on the beneficial use groundwater supply is **high**.

##### Foreseeable event (liner failure)

The *Delegated Officer* has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 9) and determined that the overall rating for the risk of leachate seepage on the beneficial use groundwater supply is **high**.

#### Lukin Swamp Reserve

##### Normal operations

The *Delegated Officer* has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 94) and determined that the overall rating for the leachate seepage on this receptor is **medium**.

##### Foreseeable event (liner failure)

The *Delegated Officer* has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 9) and determined that the overall rating for the leachate seepage on this receptor is **medium**.

## 6.8 Risk Assessment – fire impacts on amenity, public health and environment

### 6.8.1 General hazard characterisation and impact

Sources of fire at the premises include the storage of feedstocks such as green waste and the processing of compost materials where elevated temperatures to achieve pasteurization occur and are not adequately controlled. Fires may also result from biogas generated by the AD plant being diluted in air (10% - 30%) and exploding. A flare system is installed at the AD plant which is an ignition source.

Compost fires can emit fine particulates that are easily able to travel deep into the lungs presenting acute or chronic health impacts for nearby receptors. Amenity impacts from visible fire plume and deposition of material on vehicles, dwellings and clothing.

Fires result in the release of particulates and noxious gases which can contaminate land and surface waters from ash fall out. Fires can also impact on human health, amenity and wellbeing, as well as posing a threat to property and vegetation.

The Anaerobic Digestion (AD) tanks produce methane and carbon dioxide which can cause explosions if not managed correctly. Gas within the AD tanks may also be emitted in the event of AD dome ruptures and release from pressure release valves. Gases from the AD plant can also result in health impacts, impacts on amenity and wellbeing, degradation to the local air

quality and destruction of fauna within surface waters. Hydrogen sulfide may be emitted from the AD process which is a poison and may cause health effects including death from the inhalation of it.

### 6.8.2 Criteria for assessment

There are no set threshold or concentration criteria for fire assessment. The general provisions of the EP Act make it an offence to cause or allow unreasonable emissions that unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person.

### 6.8.3 Proponent controls

The AD plant is continually monitored to detect changes in pressure. If pressure becomes elevated, an alert system is activated and gas can be diverted to the flare for combustion, reducing the risk of explosion. There is also a gas leak sensors on each of the AD tanks.

Compost windrows have a minimum of 0.5m clear ground between stockpiles to allow easier access to windrows in the event of fire and to reduce fire spreading. The prescribed activities are surrounded by predominantly cleared land between the sensitive receptors to the west and north of the site, and approximately 10 metres of clear ground between the *Premises* and the Bush Forever areas to the south and east of the site.

Temperatures and moisture content of stockpiles are monitored on a weekly basis. Compost windrows are regularly turned to promote aeration and prevent excessive increases in temperature within the windrows.

### 6.8.4 Key findings

**The *Delegated Officer* has reviewed the information regarding the risk of fires from the *Premises* and has found:**

1. *Fires may arise due to a failure to control the composting process.*
2. *Fires may cause impacts to health, amenity and the environment.*
3. *There are four leachate/stormwater collection ponds onsite that provide a supply of water if required in the event of a fire.*
4. *The AD plant poses an explosion risk given the explosive nature of the gases within the system.*
5. *Imposing regulatory controls in the licence will be considered subject to the below risk assessment.*

### 6.8.5 Consequence

Based upon the sensitivity of residential receptors in close proximity to the *Premises* the *Delegated Officer* has determined that fires could result in adverse health effects or mid-level offsite environmental impacts. Therefore, the *Delegated Officer* considers the consequence of fires at the *Premises* to be **major**.

### 6.8.6 Likelihood of consequence

Based upon the *Licence Holder's* controls and proximity to residences and Jandakot airport, the *Delegated Officer* has determined that the major consequence of fires will probably not occur in most circumstances. Therefore, the *Delegated Officer* considers the likelihood to be **unlikely**.

### 6.8.7 Overall rating

The **Delegated Officer** has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 9) and determined that the overall rating for the risk of fires is **medium**.

## 6.9 Risk Assessment – point source air emission impacts on amenity, public health and environment

### 6.9.1 General hazard characterisation and impact

The stacks of the two power generators and flare stack are considered as point source emissions to air at the **Premises**.

During commissioning of the AD plant the following parameters were sampled:

- Oxygen;
- Carbon dioxide;
- Sulfur dioxide;
- Total oxides of nitrogen;
- Carbon monoxide;
- Total volatile organic compounds;
- Hydrogen sulphide; and
- Odour.

Gases from the AD plant can result in health impacts, impacts on amenity and wellbeing, degradation to the local air quality and destruction of flora and fauna within surface waters. Hydrogen sulfide may be emitted from the AD process which is a poison and may cause health effects including death from the inhalation of it.

### 6.9.2 Criteria for assessment

The National Environment Protection (Ambient Air Quality) Measure (NEPM) is the main assessment criteria for ambient air emissions and specifically addresses carbon monoxide and sulfur dioxide. The standards as specified in the NEPM for these two parameters are detailed in Table 16 below:

**Table 16: NEPM standards for pollutants**

Column 1 Item	Column 2 Pollutant	Column 3 Averaging period	Column 4 Maximum concentration standard	Column 5 Maximum allowable exceedances
1	Carbon monoxide	8 hours	9.0 ppm	1 day a year
2	Nitrogen dioxide	1 hour 1 year	0.12 ppm 0.03 ppm	1 day a year None

There are no set threshold or concentration criteria for the other parameters measured during commissioning however the general provisions of the EP Act make it an offence to cause or allow unreasonable emissions that unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person.

### 6.9.3 Proponent controls

The AD plant is fitted with a hydrogen sulphide scrubber prior to gas entering the power generators.

### 6.9.4 Key findings

The **Delegated Officer** has reviewed the information regarding the risk from point source emissions from the **Premises** and has found:

1. Point source air emissions may cause impacts to the environment, amenity and public health.
2. DWER's Air Quality Services as well as DWER's review of modelled and monitored data identified that the emission rates for the stacks were low which indicate that stack emissions from the operation of the power generator does not pose a significant risk to the environment and public health (further detail in section 4.3.5.2 above).
- 3.
4. Imposing regulatory controls in the licence will be considered subject to the below risk assessment.

### 6.9.5 Consequence

Based upon the sensitivity of residential receptors in close proximity to the **Premises** the **Delegated Officer** has determined that point source air emissions could result in adverse health effects or low-level offsite environmental impacts. Therefore, the **Delegated Officer** considers the consequence of point source air emissions at the **Premises** to be **moderate**.

### 6.9.6 Likelihood of consequence

Based upon the **Licence Holder's** controls, results of emissions monitoring and modelling data and proximity to residences and Jandakot airport, the **Delegated Officer** has determined that the major consequence point source air emissions will only occur in exceptional circumstances. Therefore, the **Delegated Officer** considers the likelihood to be **rare**.

### 6.9.7 Overall rating

The **Delegated Officer** has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 9) and determined that the overall rating for point source air emissions is **medium**.

## 6.10 Risk Assessment – mosquito impacts on amenity and public health

### 6.10.1 General hazard characterisation and impact

The ponds and pond sumps at the **Premises** are potential breeding locations for mosquitos. A site visit undertaken by City of Cockburn officers identified the presence of mosquito larvae in the pond sumps. Mosquitoes pose a risk to amenity and public health as vectors of Ross River Virus and Barmah Forest Virus.

### 6.10.2 Criteria for assessment

There are no set threshold or concentration criteria for mosquitoes. The general provisions of the EP Act make it an offence to cause or allow pollution or unreasonable emissions that

unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person.

### 6.10.3 Proponent controls

The ponds are all fitted with aerators which operate continuously. The aerators assist in preventing mosquitoes from breeding in the agitated water. There are currently no controls to address mosquitoes breeding in the pond sumps.

### 6.10.4 Key findings

The **Delegated Officer** has reviewed the information regarding the risk from mosquitoes from the **Premises** and has found:

1. Mosquitoes pose a potential risk to human health and amenity.
2. Aerators on the ponds assist in reducing mosquito breeding.
3. Site visits by City of Cockburn staff have identified the presence of mosquito larvae in pond sumps.

### 6.10.5 Consequence

Based upon the sensitivity of residential receptors in close proximity to the **Premises** the **Delegated Officer** has determined that mosquitoes could result in low-level health effects. Therefore, the **Delegated Officer** considers the consequence of point source air emissions at the **Premises** to be moderate.

### 6.10.6 Likelihood of consequence

Based upon the **Licence Holder's** controls, identification of larvae in pond sumps and proximity to residences, the **Delegated Officer** has determined that the moderate consequence for mosquitoes could occur at some time. Therefore, the **Delegated Officer** considers the likelihood to be possible.

### 6.10.7 Overall rating

The **Delegated Officer** has compared the consequence and likelihood ratings described above for the Risk Criteria (Table 9) and determined that the overall rating for mosquitoes is medium.

## 6.11 Summary of risk assessment and acceptability

A summary of the risk assessment and the acceptability of the risks with treatments are set out in Table 17 below. Controls are described further in section 7.



**Table 17: Risk assessment summary**

	Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating	Acceptability with treatment (conditions on instrument)
	Type	Source					
1.	Noise	<ul style="list-style-type: none"> <li>• Feedstock storage and unloading</li> <li>• Pre-treatment of feedstock (inside and outside)</li> <li>• Generation and processing of outdoor compost windrows</li> <li>• Generation of electricity</li> <li>• Bagging station</li> </ul>	Air/Wind dispersion pathway to residential properties	<ul style="list-style-type: none"> <li>• Sand ridge along boundary of greenwaste processing area</li> <li>• Muffler on greenwaste grinder and windrow turner</li> <li>• 150mm cool-room panels on AD plant receipt hall</li> <li>• Doors of bagging station are closed when operations are being undertaken</li> <li>• Site vehicles are fitted with low tonal reversing alarms</li> <li>• SOP's for noise management</li> <li>• Relocation of green waste grinder/shredder</li> </ul>	Impacts on amenity and wellbeing	<p>Minor consequence Likely <b>Medium risk</b></p>	Acceptable, generally subject to regulatory controls
2A.	Dust (including bioaerosols)	<ul style="list-style-type: none"> <li>• Feedstock storage and unloading</li> <li>• Pre-treatment of feedstock (inside and outside)</li> </ul>	Air/Wind dispersion pathway to residential properties	<ul style="list-style-type: none"> <li>• Mobile and fixed sprinklers</li> <li>• Water cart</li> <li>• Water sprays on screener and grinder</li> </ul>	<ul style="list-style-type: none"> <li>• Impacts to amenity and wellbeing</li> <li>• Health impacts associated with inhalation of particulates/bioaer</li> </ul>	<p>Moderate consequence Possible <b>Medium risk</b></p>	Acceptable, generally subject to regulatory controls.

	Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating	Acceptability with treatment (conditions on instrument)
	Type	Source					
2B	Dust (including bioaerosols)	<ul style="list-style-type: none"> <li>• Generation and processing of outdoor compost windrows</li> <li>• Bagging station</li> </ul>	Air/Wind dispersion pathway to Lukin Swamp	<ul style="list-style-type: none"> <li>• Sealed access roads</li> <li>• Bagging plants fitted with dust extraction units</li> <li>• Onsite visual monitoring of wind direction and speed</li> <li>• SOP's for dust management</li> </ul>	osols	<p>Moderate consequence Unlikely <b>Medium risk</b></p>	Acceptable, generally subject to regulatory controls.
3A	Odour	Feedstock storage and unloading	Air/wind dispersion pathway to residential properties	<p>Odorous feedstocks are unloaded and stored within the enclosed AD receival hall which is fitted with an exhaust system that connects to a biofilter.</p> <p>All odorous wastes are included into the AD plant within 24 hours</p>	Impacts to amenity and wellbeing	<p>Major consequence Unlikely <b>Medium risk</b></p>	Acceptable, generally subject to regulatory controls.
3B		Receival Hall: Pre-treatment of feedstock (inside)		<p>Odorous feedstocks are processed within the enclosed AD receival hall which is fitted with an exhaust system that connects to a biofilter</p>		<p>Major consequence Unlikely <b>Medium risk</b></p>	
3C		Biofilter on Receival Hall		<p>Odorous air from the receival hall, mixing tank and dosing tank is directed to the biofilter</p>		<p>Major consequence Unlikely <b>Medium risk</b></p>	

	Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating	Acceptability with treatment (conditions on instrument)
	Type	Source					
3D	Odour	Pre-treatment of feedstock (outside)	Air/wind dispersion pathway to residential properties	No specific controls	Impacts to amenity and wellbeing	Major consequence Rare <b>Medium risk</b>	Acceptable, generally subject to regulatory controls.
3E		Generation and processing of outdoor compost windrows, including application of digestate.		Compost windrows are regularly turned to promote aeration, reducing likelihood of windrows generating odour in anaerobic conditions.		Major consequence Likely <b>High Risk</b>	Acceptable subject to multiple regulatory controls.
3F		Generation and processing of outdoor compost windrows, without digestate				Major consequence Unlikely <b>Medium risk</b>	Acceptable, generally subject to regulatory controls.
3G		AD Tanks: in-vessel composting		AD tanks are sealed and connected to an electrical generator for conversion as well as a flare for combustion of odorous gas as required.		Major consequence Rare <b>Medium risk</b>	Acceptable, generally subject to regulatory controls.
3H		Leachate ponds		All leachate ponds are fitted with aerators		Major consequence Possible <b>High risk</b>	Acceptable subject to multiple regulatory controls.
3I		Bagging station		Bagging plants fitted with dust extraction units although no odour treatment is undertaken		Major consequence Unlikely <b>Medium risk</b>	Acceptable, generally subject to regulatory controls.

	Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating	Acceptability with treatment (conditions on instrument)
	Type	Source					
3J	Odour	Pond desludging	Air/wind dispersion pathway to residential properties	No specific controls	Impacts to amenity and wellbeing	Major consequence Rare <b>Medium risk</b>	Acceptable, generally subject to regulatory controls.
4A	Leachates	Feedstock storage and unloading; Pre-treatment of feedstock; Outdoor composting process; Leachate ponds	Seepage through soil to groundwater (most affected receptor)	Hardstand areas HDPE lined ponds	Health impacts associated with contamination of groundwater drinking water and domestic supply for nearby users.	Normal operations Major consequence Possible <b>High risk</b>	Acceptable subject to multiple regulatory controls.
4B						Foreseeable event Severe consequence Unlikely <b>High risk</b>	
4C			Over land flow and migration through groundwater to Lukin Swamp Reserve.		Normal operations Moderate consequence Rare <b>Medium risk</b>	Acceptable, generally subject to regulatory controls.	
4D					Foreseeable event Major consequence Rare <b>Medium risk</b>		

	Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating	Acceptability with treatment (conditions on instrument)
	Type	Source					
5	Fires (including fugitive gases)	<p>Feedstock unloading and storage;</p> <p>Composting process (formation windrows and turning operations – includes Anaerobic Digestion plant);</p> <p>Generation of electricity;</p> <p>Product storage;</p>	<p>Air/wind (smoke) and overland (fire) to residential properties, Lukin Swamp, Bush Forever areas</p> <p>Seepage (of gas) through soil and groundwater to Lukin Swamp and Bush Forever areas</p>	<ul style="list-style-type: none"> <li>AD plant gas levels monitored</li> <li>Separation distances between compost stockpiles</li> <li>Large supply of water onsite</li> <li>Wetting down material during shredding/grinding activities</li> <li>Monitoring of temperature and moisture levels in windrows</li> <li>Irrigation ring main around the Premises</li> </ul>	<p>Public health effects (including asphyxia) from inhaled particulates and gases</p> <p>Impacts to amenity and wellbeing including odour impacts from gases</p> <p>Contamination to surface water quality and flora and fauna within surface water from drop out of ash, other particulates and gases.</p> <p>Destruction to flora within Bush Forever areas</p> <p>Contamination of groundwater and drinking water supply (PDWSA)</p>	<p>Major consequence</p> <p>Unlikely</p> <p>Medium risk</p>	Acceptable, generally subject to regulatory controls.
6	<p>Point source air emissions:</p> <ul style="list-style-type: none"> <li>Carbon dioxide;</li> <li>Sulfur dioxide;</li> <li>Total oxides of nitrogen;</li> </ul>	<p>AD plant flare stack;</p> <p>AD plant power generator stacks</p>	<p>Air/wind (smoke) and overland (fire) to residential properties, Lukin Swamp, Bush Forever areas</p>	<p>The AD plant is fitted with a hydrogen sulphide scrubber system</p>	<p>Public health effects (including asphyxia) from inhaled particulates and gases in air emissions</p> <p>Impacts to amenity and wellbeing including odour impacts from air</p>	<p>Moderate consequence</p> <p>Rare</p> <p>Medium risk</p>	Acceptable, generally subject to regulatory controls.

	Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating	Acceptability with treatment (conditions on instrument)
	Type	Source					
	<ul style="list-style-type: none"> <li>• Carbon monoxide;</li> <li>• Total volatile organic compounds;</li> <li>• Hydrogen sulphide; and</li> <li>• Odour.</li> </ul>				<p>emissions</p> <p>Contamination to surface water quality and flora and fauna within surface water from particulates and gases in air emissions.</p> <p>Destruction to flora within Bush Forever areas</p>		
7	Mosquitoes	Ponds and pond sumps	Air/wind and migration path of pests	Aerators in ponds	Impacts to health and amenity of residents	<p>Moderate consequence</p> <p>Possible</p> <p><b>Medium risk</b></p>	Acceptable, generally subject to regulatory controls.

## 7. Determined Regulatory Controls

A summary of the risks with corresponding controls are set out in Table 18. The risks are set out in the assessment in section 6 and the controls are detailed in this section 7. Controls will form the basis of conditions in the licence set out in Attachment 1.

**Table 18: Summary of regulatory controls to be applied**

		Controls (references are to sections below setting out details of controls)					
		8.1 Feedstock controls	8.2 Infrastructure and Equipment	8.3 Groundwater Monitoring	8.4 Leachate pond and monitoring	8.5 Operational controls	8.6 Other monitoring
Risk Items (see risk analysis in section 7)	1. Noise		•			•	•
	2A. Dust on residential properties and airport		•			•	
	2B. Dust on Lukin Swamp and Bush Forever areas		•			•	
	3A. Odour from feedstock storage and unloading	•				•	
	3B. Odour from Receiving Hall: Pre-treatment of feedstock	•	•			•	
	3C. Odour from biofilter on Receiving Hall		•			•	
	3D. Odour from pre-treatment of feedstock (outside)	•				•	
	3E. Odour from outdoor compost production without digestate	•				•	
	3F. Odour from AD Tanks: in-vessel composting	•	•			•	

<b>Risk Items</b> (see risk analysis in section 7)	3G. Odour from leachate ponds	•	•			•		
	3H. Odour from bagging station	•				•		
	3I. Odour from pond desludging				•	•		
	4A. Leachate: Seepage through soil to groundwater		•	•	•	•		
	4B. Leachate: Over land flow and migration through groundwater to Lukin Swamp Reserve.		•	•	•	•		
	4C. Leachate: Over land flow and migration through groundwater to Bush Forever area		•	•	•	•		
	5. Fires (including gases): Air/wind and overland to residential properties; Seepage through soil and groundwater to Lukin Swamp and Bush Forever areas Contamination of groundwater						•	
	6. Point source air emissions: Air/wind dispersion to residents, airport, Bush Forever areas and Lukin Swamp		•				•	
	7. Mosquito impacts on amenity and health						•	



## 7.1 Feedstock controls

### 7.1.1 Feedstock types

The **Licence Holder** will be limited to accepting the materials assessed under this licence (as detailed below) and will be required to store the solid wastes within hardstand areas or the receival hall, and liquid wastes direct to the mixing tank of the AD plant.

- Green waste;
- Sawdust;
- Pine bark;
- Chicken, cow and sheep manure;
- Grain wastes;
- Solid food wastes;
- Waste water from animal processing facilities;
- Waste from grease traps limited to milk solids; and
- Food and beverage processing wastes.

**Grounds:** *The **Delegated Officer** has maintained the feedstocks currently accepted onsite by the **Licence Holder** although the types of wastes within controlled Waste Category K200 have been expanded, and K110 has been included in the event that milk solids as grease traps wastes are received. The **Delegated Officer** considers that the accepted feedstocks are beneficial to the AD and composting processes.*

*Non-conforming wastes may pose an increased risk of odour generation due to the potential variability in contents, which may have unpredictable reactions within the composting process.*

### 7.1.2 Feedstock volumes

Volumes of feedstock are limited to the following:

- Green waste: 20,000 tonnes/annual period;
- Sawdust: 20,000 tonnes/annual period;
- Pine bark: 15,000 tonnes/annual period;
- Manure: 10,000 tonnes/annual period;
- Grains and solid food waste: 10,000 tonnes/annual period;
- Controlled waste code K100 (waste water from animal processing plants): combined total volume of 25,000 tonnes/year with K200 below;
- Controlled waste codes K200 (food processing liquid wastes) and K110 (grease trap wastes limited to milk solids) accepted into AD plant: combined total volume of 25,000 tonnes/year with K100 above; and
- Digestate from onsite AD plant applied on indoor windrows: 16,333tonnes/annual period.

All feedstocks (excluding green waste, pine bark and saw dust) are required to be added to the AD process within 48 hours of being received.

Each load of feedstock entering the **Premises** is required to be recorded. Each load of waste (including digestate) or completed product that is rejected or leaves the **Premises** is also required to be recorded as well as the volume of digestate that is applied to the indoor

composting process.

**Grounds:** The **Delegated Officer** has determined that maintaining the existing volumes of feedstock accepted at the **Premises** is considered to be acceptable in conjunction with the other regulatory controls on this licence to manage and mitigate emissions.

**Note:** These controls generally replicate the **Licence Holder's** controls and were considered by the **Delegated Officer** in determining odour emission impact risk.

Volumes of digestate for onsite application have been determined based on DWER calculations of the volume that can be utilised within the composting process as set out in section 4.3.5.4.

Should the occupier be unable to find an alternative disposal option for the excess digestate generated onsite, the volumes of wastes (both solid and liquid) accepted at the **Premises** for the AD plant may be reduced to generate a lower volume of digestate.

## 7.2 Infrastructure and equipment controls

### 7.2.1 Dust emissions infrastructure and equipment

The following environmental controls, infrastructure and equipment should be maintained in good working order and operated onsite for dust management:

- Fixed and mobile sprinklers
- Irrigation ring main system
- Water cart with 12,000L capacity and hose attachment
- Sprinkler system/water sprays on screener for dry products
- Sprinkler system/water sprays on greenwaste grinder
- Abstraction bore
- Dust extraction units on bagging plants

**Note:** These controls generally replicate the **Licence Holder's** controls and were considered by the **Delegated Officer** in determining dust emission impact risk.

### 7.2.2 Odour emissions infrastructure and equipment

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

- Receival Hall under negative pressure with air exhaust system
- Biofilters (Two on composting shed and 1 on Receival Hall)
- Flare
- Aerators in leachate ponds (all) to be operated on a 24 hour basis
- Enclosed AD tanks
- Appropriate screens or traps are installed on sumps to capture solid materials preventing it from entering the Main Pond, Pond 1 and Pond 2.

The Receival Hall roller doors are required to remain closed when vehicle access is not required. Pedestrian doors shall be used for access at other times.

**Note:** These controls generally replicate the **Licence Holder's** controls and were considered by the **Delegated Officer** in determining odour emission impact risk.

Ensuring the Receival Hall door is kept closed other than when vehicle access is required to

*the building prevents the release of odours from the building and assists in the maintenance of negative pressure in the building.*

### 7.2.3 Leachate emissions infrastructure and equipment

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

- Asphalt hardstand
- Limestone hardstand
- Leachate pond system
- Groundwater monitoring bores

To ensure the free drainage of all runoff from the Hardstands into the Pond 1, Pond 2 and Pond 3, the Hardstands must retain their existing grade of 1 in 100 drainage gradient.

**Note:** *These controls generally replicate the Licence Holder's controls and were considered by the Delegated Officer in determining leachate emission impact risk.*

**Grounds:** *The maintenance of the existing infrastructure is necessary for the mitigation of liquid waste (digestate) and leachate impacts to groundwater. The specification of a Hydraulic Conductivity of  $\leq 1.0 \times 10^{-8}$  m/s for the asphalt and limestone Hardstands will ensure that seepage of leachates and consequently groundwater contamination from these locations is adequately controlled.*

*Note that a requirement for the Licence Holder to undertake testing to verify the Hydraulic Conductivity of the pond liners is included as a specified action.*

*Appropriate grading of the Hardstands and drainage channels prevents pooling, thus reducing the risk of seepage and controlling odour.*

### 7.2.4 Fire risk management infrastructure and equipment

The following environmental controls, infrastructure and equipment should be maintained in good working order and operated onsite for fire risk management:

- Flare
- Enclosed AD tanks
- Pressure detection software and sensors

**Note:** *These controls generally replicate the Licence Holder's controls and were considered by the Delegated Officer in determining fire emission impact risk.*

**Grounds:** *The maintenance of the existing infrastructure is necessary for the mitigation of the high risk posed by gas emissions.*

## 7.3 Operational controls

### 7.3.1 Windrow management (for leachate, odour and fire impacts)

Outdoor composting windrows must be managed in accordance with the following:

- Windrows are turned regularly to ensure aerobic conditions are maintained;
- The core temperature of the composting pile is maintained between 55 °C and 65 °C for a period of at least three days;
- Moisture level in the composting piles is maintained between 40 to 65 percent;
- An input nutrient balance (carbon: nitrogen ratio) of 25:1 to 35:1 is to be maintained;

- Windrows must not exceed 3 metres high, 5 metres wide and 120 metres long;
- Windrows are separated by at least 0.5 metres of clear ground;
- Ensure that, as a minimum, compost meets physical and chemical requirements set out by AS4454.

Based on the odour risk assessment for indoor composting, the Delegated Officer requires the green waste to be blended with digestate within the composting shed while the biofilters are operational the shed operating under negative pressure. This is a change to what SOP3A.03 has proposed.

As per section 3.2.1 of AS 4454, high risk materials require the compost mass to be maintained at a minimum of 55 °C for 15 days or longer, with a minimum of five turns to be undertaken during this time. The **Delegated Officer** considers that digestate is a higher risk feedstock and that this procedure should be followed. This is incorporated into the regulatory control below.

Indoor composting windrows must be managed in accordance with the following:

- Windrows are turned regularly to ensure aerobic conditions are maintained;
- An input nutrient balance (carbon: nitrogen ratio) of 25:1 to 35:1 is to be maintained;
- The core temperature of the composting pile is maintained between 55 °C and 65 °C for a period of at least 15 consecutive days;
- Moisture level in the composting piles is maintained between 40 to 65 percent;
- Digestate from the AD plant may only be used in composting activities undertaken within an enclosed shed with operational odour mitigation measures (biofilter).
- Digestate application to indoor composting windrows is limited to 486.1 tonnes per 595.24 tonnes of green waste per compost batch (per windrow). The digestate must be applied within the shed.

The Delegated Officer considers that compost biological stability is achieved when daily monitoring of compost shows a stable reading (+/- 5% change) for oxygen, carbon dioxide, moisture and temperature for a period of at least four days. Based on the Delegated Officer's experience with composting facilities, it is anticipated that stability will not occur in less than four weeks. Once the Licence Holder has demonstrated the above, compost is allowed to be moved outside for maturation as per the below regulatory control.

Prior to removing compost from the Composting Shed, the **Licence Holder** the following requirements must be met:

- (a) Initial blending of digestate occurred a minimum four weeks prior to removal;
- (b) A level of at least 5 is achieved on the Solvita Compost Maturity Index; and
- (c) Following pasteurisation:
  - (i) Temperature has remained stable (+/- 5%) for a period of at least four consecutive days;
  - (ii) Moisture content has remained stable (+/- 5%) for a period of at least four consecutive days;
  - (iii) Oxygen levels have remained stable (+/- 5%) for a period of at least four consecutive days; and
  - (iv) Carbon dioxide levels have remained stable (+/- 5%) for a period of at least four consecutive days.

Temperature, carbon dioxide, oxygen and moisture content monitoring of the composting

process is required to be undertaken within the indoor composting shed on a daily basis.

### 7.3.2 Leachate pond management (for leachate and odour impacts)

Leachate ponds must be managed in accordance with the following:

- Ponds are free from solid matter at all times.
- A freeboard of 300mm is maintained at all times.
- Vegetation and floating debris (emergent or otherwise) is prevented from encroaching onto pond surfaces or inner pond embankments.
- A minimum of 1m of liquid is required to be maintained in all ponds between July and November each year.

**Note:** The controls for windrow management and leachate pond management generally replicate the **Licence Holder's** controls and were considered by the **Delegated Officer** in determining liquid waste/ leachate emission and odour emission impact risks. The requirement to only use up to 486.1 tonnes of digestate per 595.24 tonnes of green waste for each compost batch within an enclosed shed is in addition to the existing Licence and **Licence Holder** controls and has been determined based on DWER's calculations for the amount of digestate required for onsite application.

**Grounds:** The **Delegated Officer** has determined that based on the outcomes of the risk assessment detailed in this report, additional regulatory controls through licence conditions are required to mitigate the high liquid waste/leachate impact risk and odour emissions impact risk.

The requirements to apply digestate on windrows within an enclosed shed fitted with odour mitigation and to reduce the volume of digestate applied are considered necessary to reduce odour emissions.

The requirement to maintain a minimum of 1m of liquid in the leachate ponds during July and November assists in providing enough pressure to prevent hydrostatic uplift of the liner during winter when the base of the pond are submerged and assists in containing leachate within the ponds.

### 7.3.3 Dust emissions management

As discussed in section 8.2.2 above, the **Licence Holder** is required to operate associated infrastructure to mitigate dust emissions.

**Note:** The controls for odour management generally replicate the **Licence Holder's** controls and were considered by the **Delegated Officer** in determining dust emission impact risk.

**Grounds:** The requirement to operate dust mitigation equipment and infrastructure are considered to be effective in minimising dust emissions.

### 7.3.4 Noise emissions management

As identified in data provided to DWER, the green waste grinder and windrow turner are the dominant sources of noise emissions from the **Premises**. As there is the potential that noise emissions from the **Premises** do not meet the assigned levels in the Noise Regulations, the licence limits the operation of these pieces of machinery so that only one may be in operation at any one time to assist in reducing the cumulative noise impacts from the **Premises**.

Additionally, a regulatory control has been included to require that the green waste grinder is only operated from a new location (near Pond 4 and the Composting Shed) which the acoustic assessment (2017) has demonstrated meets the day-time assigned levels of the Noise Regulations. Another control has been placed on the licence to require the green waste

grinder to only be operated during day-time hours.

**Grounds:** *The Delegated Officer has determined that based on the outcomes of the risk assessment detailed in this report including advice provided by DWER's Noise Regulation in the Technical advice, additional regulatory controls through licence conditions are required to mitigate the medium noise impact risk.*

*The requirement to operate the green waste grinder and outdoor windrow turner at alternate times will reduce the likelihood of the assigned levels in the Noise Regulations being exceeded. Restricting operations of the green waste grinder to day-time hours only assists in meeting compliance with the Noise Regulations.*

*The relocation of the green waste grinder is required to ensure the machinery is operating at a location which has been determined in the acoustic assessment as suitable to comply with the Noise Regulations.*

### 7.3.5 Point source air emissions management

To maintain an acceptable level of risk for point source air emissions from the generators, limits have been placed on stack emissions.

**Grounds:** *The Delegated Officer has determined that based on the outcomes of the risk assessment detailed in this report including advice provided by DWER's Air Quality Branch on the remodelled stack data, a regulatory control is required to limit point source air emissions to the level that has been assessed (modelled) and demonstrated to be acceptable.*

## 7.4 Groundwater controls

### 7.4.1 Groundwater monitoring

The **Licence Holder** is required to carry out the groundwater monitoring at bores MB1 to MB11 of the **Premises** for the following parameters:

- Temperature
- Electrical conductivity
- Standing water level
- pH
- Redox potential
- Biological oxygen demand (BOD)
- Chemical oxygen demand (COD)
- Total dissolved solids (TDS)
- Nitrate + nitrite (as nitrogen)
- Ammonia nitrogen
- Total nitrogen
- Total phosphorus
- Total organic carbon
- Bicarbonate + Carbonate
- Arsenic

- Calcium
- Chloride
- Iron
- Magnesium
- Manganese
- Potassium
- Sodium
- Sulfate
- Delta nitrogen 15
- Delta carbon 13

The **Licence Holder** is required to undertake quarterly groundwater monitoring (except for delta nitrogen 15 and delta carbon 13, which is six-monthly) with sample collection undertaken in January, April, July and September for the first four sampling rounds, reducing to bi-annually after this.

In the event that groundwater monitoring data indicates figures of 5.0 mg/L for ammonium-nitrogen or total nitrogen (Action Criteria), the **Licence Holder** is required to undertake resampling of the bore(s) that had the exceedance and to conduct an investigation into the source of the exceedance. The sampling data and findings of the investigation are required to be submitted to DWER within one month of the resampling being undertaken.

The **Licence Holder** will be required to undertake monitoring following the methods specified in AS 5667.1 and AS 5667.11 and have the results tested by a NATA accredited laboratory.

**Note:** *The Delegated Officer has determined that based on the outcomes of the risk assessment detailed in this report, regulatory controls through licence conditions are required to monitor the high groundwater emission impact risk, and further clarify the extent to which any groundwater contamination is migrating.*

*The monitoring is based on the existing monitoring requirements but has been expanded to include additional bores and sampling parameters. Monitoring frequency has been increased to monthly intervals for an interim period and following the exceedance of groundwater Action Criteria.*

**Grounds:** *Due to high risk of leachate on the Priority 1 and 2 Public Drinking Water Source Areas and the insufficiency of the existing groundwater monitoring network at identifying impacts from onsite activities, additional bores are required to be installed and monitored onsite to obtain an accurate reflection of onsite impacts, including any impacts from the unauthorised application of high nutrient digestate.*

*The quarterly monitoring frequency has been included to provide a more representative data set of seasonal trends which is currently not available for the Premises given the insufficiency of the existing monitoring bore network. Once this data set has been obtained for the first year, monitoring frequency will decrease to bi-annual.*

*The requirement to monitor for delta nitrogen 15 and delta carbon 13 will enable DWER to establish whether any contamination in the bores is a result of natural processes in the groundwater or whether the site is the source.*

*Action Criteria have been included as a trigger level to undertake monthly monitoring for further investigations into potential groundwater contamination sources and to protect the water quality for public use. The parameters required to be sampled have been expanded to include a suite of metals, bicarbonate and isotopes which are relevant to the materials received, used, and stored at the **Premises** and will also assist in identifying whether nutrients in groundwater are from a natural or onsite source.*

*The groundwater Action Criteria and sampling regime have been derived from values determined from the Technical Advice provided by DWER's Technical expert advice. The requirement to have the results taken using a specified method and analysed in a specified laboratory is considered appropriate in ensuring the quality and accuracy of the data submitted.*

#### **7.4.2 Groundwater monitoring reporting**

The **Licence Holder** will be required to report groundwater monitoring on a six monthly basis as well as being able to produce the report upon request from a DWER officer. This report will be required to contain raw data in excel format, comparison of data against groundwater Action Criteria, relevant criteria (i.e. Drinking Water Guidelines) comparison against previous sampling rounds, and details of sampling quality assurance and quality control.

In the event of Groundwater Action Criteria being exceeded, the **Licence Holder** will be required to resample the bore(s) that showed the exceedance. If the Groundwater Action Criteria are still being exceeded, the **Licence Holder must** report monitoring results to DWER immediately following identification of the repeated exceedance, and will also be required to include exceedance dates, raw monitoring data in Excel format, details of an investigation into the exceedance and details of mitigation measures should the exceedance be attributable to the **Licence Holder's** activities.

**Grounds:** *The Delegated Officer considers that this reporting is appropriate to monitor groundwater impacts at the **Premises**, and the specification of the reporting requirements is sufficient to enable DWER to analyse the data. The data will be used to determine the adequacy of infrastructure controls and assess for groundwater impacts resulting from infrastructure defects, failure, or malfunction (e.g. pond seepage as a result of liner failure). DWER may review the appropriateness and adequacy of the licence controls based on the review of the monitoring data.*

*The reporting frequency based on the exceedances of groundwater Action Criteria provides a mechanism for DWER to be informed of issues and respond to an exceedance event within a shorter timeframe than if the exceedance was reported annually. The requirement to investigate the cause of the exceedance and document remedial actions will ensure that appropriate environmental management takes place and emissions are minimised.*

#### **7.4.3 Leachate pond monitoring**

The **Licence Holder** is required to undertake monitoring of pond water at the **Premises** for the following parameters:

- pH
- Temperature
- Biological oxygen demand (BOD<sub>5</sub>)
- Volume of sludge

The **Licence Holder** will be required to desludge a pond when sludge is at more than 30% capacity. Capacity is calculated as pond water volume, not including freeboard. Prior to



desludging, the **Licence Holder** is required to provide a desludging management plan to DWER to address how odour and leachate emissions will be managed during desludging activities.

**Grounds:** Pond water quality sampling is currently being undertaken by the **Licence Holder**. Due to the high impact of odour emissions from the leachate ponds, ongoing monitoring is considered necessary to assess whether the ponds are working effectively and to evaluate the potential for the production of odorous compounds. A monitoring regime of all operational ponds at the **Premises** has been specified in the licence.

Desludging of the ponds will ensure that the operational capacity of the ponds is maintained. The buildup of sludge in the aerobic ponds can also promote anaerobic conditions that increase the risk of odorous compounds being generated.

#### 7.4.4 Pond monitoring reporting

The **Licence Holder** will be required to report pond sludge monitoring volumes on an annual basis. This report will be required to contain raw data in excel format, time series graphical plots, comparison of data against pond Action Criteria, and details of sampling quality assurance and quality control.

In the event that any actions were required to be taken due to a drop in oxygen levels below the Pond Action Criteria, details of the event and an investigation into the cause is required to be provided in the annual report. Details of any desludging activity are also required to be provided.

**Grounds:** The **Delegated Officer** considers that the prescribed water quality monitoring and the criteria based actions are required to ensure that ponds are adequately managed so that odour generation is minimised. DWER will use the reported information on pond management to assess whether ponds have been appropriately managed or whether additional controls are required. DWER may also request pond management data outside the annual reporting timeframe as part of compliance inspections or complaint investigations.

#### 7.5 Point source air emissions controls

The **Licence Holder** is required to undertake annual monitoring for air emissions from the generator stacks. These results are required to be provided to the CEO each year.

Emission limits for the gas engine stacks have been included on the licence and reflect emissions limits that the **Delegated Officer** considers necessary to reduce the impacts to the environment and public health from point source emissions to air. The emission limits represent the data considered in the AQS assessment of the emissions to air (rounded up) and which have been determined to not represent an unacceptable risk to the environment and public health.

The **Licence Holder** is also required to keep a record of the dates and duration that the flare is used and to provide these results as part of the annual monitoring report.

**Grounds:** The **Delegated Officer** considers that the air emissions monitoring is required to ensure that the air emissions from the stack and power generators remain at levels that are unlikely to impact on the environment or public health.

#### 7.6 Specified actions

### 7.6.1 Pond integrity actions

The **Licence Holder** will be required to carry out either a seepage rate testing on all ponds on the **Premises** using an overnight water balance test, or carry out electronic liner integrity testing. If the **Licence Holder** decides to undertake the overnight water balance test, this is required to be undertaken in the summer months when the water table is below the base of the pond liner.

Within one month of the chosen testing being completed, the **Licence Holder** is required to report the findings of the testing and, should the results indicate that a hydraulic conductivity of  $\leq 1.0 \times 10^{-9}$  m/s is not being met, include a plan to upgrade the pond lining.

**Grounds:** The **Richgro Premises** is located within a Priority 2 Public Drinking Water Source Area (PDWSA) and immediately adjacent to a Priority 1 PDWSA. Groundwater monitoring carried out at Richgro has confirmed that sources of contamination are present and although these are likely to be from the result of over abstraction impacts on the Lukin Swamp, the ponds are potential sources of contamination.

*Given the potential for the ponds to be sources of contamination, a requirement for the Licence Holder to investigate the integrity of the ponds has been included and allows the Licence Holder to choose to undertake a test for seepage rates or a test for liner integrity. The Delegated Officer considers that the proposed tests for either an overnight water balance test (Ham and Baum, 2009) for seepage rate or electrical testing (ASTM D7007) for liner integrity are the most appropriate testing methods.*

*Should the test results confirm that any of the leachate ponds do not meet a hydraulic conductivity of  $1.0 \times 10^{-9}$  m/s, liner repair or pond relining may be required.*

### 7.6.2 Noise emissions assessment

The **Licence Holder** is required to undertake a noise assessment to determine maximum noise levels received at sensitive receptors. This requires noise monitoring to be undertaken at the location of the closest sensitive receptors as well as during night time operations (bagging station). If the assessment identifies that the site operations do not meet the assigned levels in the Noise Regulations, the occupier must provide a detailed plan outlining what noise mitigation measures will be implemented at the **Premises** to meet compliance, and a timeframe to detail when the mitigation measures will be undertaken.

**Grounds:** The noise monitoring and modelling data provided by the **Licence Holder** indicates that the assigned levels in the Noise Regulations may be exceeded. The noise monitoring assessment will be used to determine the appropriateness of noise controls at the **Premises**.

*DWER may review the appropriateness and adequacy of the licence controls based on the details of the assessment. Additional controls may be required to mitigate the risk of any noise exceedances.*

## 8. Premises production or design capacity

### 8.1 Category 61: Liquid waste facility

A Premises Production or Design Capacity of 25,000 tonnes for Category 61 has been included within the general description of the Premises in Schedule 2 of the Revised Licence and has not changed from the Existing Licence. If the **Licence Holder** is unable to sufficiently manage the digestate from the AD plant, the **Delegated Officer** may consider reducing this throughput.

## 8.2 Category 61A: Solid waste facility

A Premises Production or Design Capacity of 75,000 tonnes for Category 61A has been included within the general description of the Premises in Schedule 2 of the Revised Licence. The Existing Licence authorised up to 65,000 tonnes per year. The Revised Licence has included the 10,000 tonnes of solid wastes entering the AD plant.

## 8.3 Category 67A: Compost manufacturing and soil blending

A Premises Production of Design Capacity of 50,000 tonnes for Category 67A has been included within the general description of the Premises in Schedule 2 of the Revised Licence and has changed from the Existing Licence.

The risk assessment and proposed controls have been determined based on the current throughput of approximately 50,000 tonnes per year and the **Delegated Officer** has determined that these controls are sufficient in regulating the odour and liquid waste/leachate risk. An increase beyond this throughput may result in emissions which are not sufficiently mitigated by the licence controls.

## 9. Appropriateness of Licence conditions

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

*Guidance Statement on Licence Duration* has been applied and the Issued Licence expires in 8 years from date of issue.

Condition Ref	Grounds
Emissions	This condition is valid, risk-based and consistent with the EP Act.
Information	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.
Feedstock Controls	These conditions are valid, risk-based and contain appropriate controls (see section 8).
Infrastructure and Equipment Controls	
Operational Controls	
Groundwater Monitoring and actions and Reporting	
Pond Monitoring and actions and reporting	
Specified Actions	

The scope of the Department's *Guidance Statement: Land Use Planning* has been considered in DWER's decision making. The Delegated Officer notes that the use of the premises for composting operations has been established through both the land use planning system and Part V licensing. The Delegated Officer also notes that the current retrospective planning applications seek approval for specific pieces of critical infrastructure on the premises, an extension to the hours of operation and matters which do not relate to the prescribed premises activities.

The Delegated Officer considers that as:

- the land use as a composting facility has been established on the premises through the land use planning system;
- the infrastructure which is the subject of the current retrospective planning

applications (excluding the application for pond 5) is critical pollution control equipment which is necessary to prevent unacceptable impacts to the environment and public health arising from the composting activities;

- preventing the use of this infrastructure may result in unacceptable impacts to the environment and public health from the composting operations;
- DWER is able to assess the suitability of the infrastructure/hours of operation in terms of its ability/effectiveness at controlling emissions and discharges from the premises;
- approval by DWER does not imply or provide any approval for the use of infrastructure or implementation of hours of operation under the land use planning system and does not negate the need for Richgro to obtain all relevant planning approvals to regularise these issues from a planning perspective;
- there is a need for DWER to ensure additional regulatory controls are imposed on the licence to prevent unacceptable impacts to the environment and public health and it would be unreasonable to allow on-going impacts to the community due to the delays in the planning process;

It is appropriate in this instance for DWER to complete its decision making on the licence review in advance of the City of Cockburn determining the retrospective planning applications.

Should retrospective planning approval not be granted for key pieces of infrastructure, Richgro will need to provide DWER with details of how emissions and discharges from their composting process will be operated and managed to prevent unacceptable impacts on the environment and public health. This may result in the need for Richgro to submit a licence amendment application.

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

## 10. Applicant's comments

The applicant was provided with the draft decision report and draft licence approval on 6 September 2017 and 6 December 2017. The Licence Holder's comments are stated and addressed in Appendix 2.

## 11. Conclusion

This assessment of the risks of activities on the **Premises** has been undertaken with due consideration of a number of factors, including the documents and policies specified in this decision report (summarised in Appendix 2). This assessment was also informed by a site inspection by DWER officers on 29 September 2016 and several site visits in 2017.

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



**Ruth Dowd**  
**Senior Manager Industry Regulation (Waste Industries)**  
**Delegated Officer**  
under section 20 of the *Environmental Protection Act 1986*

## Appendix 1: Key Documents

	Document Title	Availability
1	Licence L7308/1998/13 – Richgro Garden Products	accessed at <a href="http://www.dwer.wa.gov.au">http://www.dwer.wa.gov.au</a>
2	Works Approval W5311/2012/1 – Richgro Garden Products granted 21/01/2013	DWER records (A594282)
3	Richgro Garden Products Environmental Assessment Report for works approval W5311/2012/1	DWER records (A594298)
4	Works Approval W5311/2012/1 – Richgro Garden Products – Amended 18/07/2016	DWER records (A594298)
6	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	accessed at <a href="http://www.dwer.wa.gov.au">http://www.dwer.wa.gov.au</a>
7	DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.	
8	DER, August 2016. <i>Guidance Statement: Licence duration</i> . Department of Environment Regulation, Perth.	
9	DER, November 2016. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	
10	DER, November 2016. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	

## Appendix 2: Summary of Applicant's Comments on Risk Assessment and Draft Conditions

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
<b>Comments on draft licence conditions</b>			
1	<p><b>Table 1: Feedstock Table</b></p> <ul style="list-style-type: none"> <li>• Amend to reflect an input of 10,000 tonnes/year of manures (to incorporate chicken, cow and sheep manure) instead of the proposed 500 tonnes/year of chicken manure only</li> <li>• Remove reference to specific waste food types and include a generalised description</li> <li>• Combine total volume of liquid wastes accepted onsite (25,000 tonnes/year)</li> <li>• Increase throughput of solid wastes entering AD plant from 7,000 to 10,000 tonnes/year</li> <li>• Increase volume of green waste from 20,000 tonnes to 35,000 tonnes per year</li> </ul>	<ul style="list-style-type: none"> <li>• The existing licence authorised up to 10,000 tonnes/year of manures for use in bagging plant. The premises accepts cow, poultry and sheep manures. These operations have not changed and should be reflected in the licence.</li> <li>• Listing specific waste descriptions limits the types of wastes that can be received onsite. The broader definition for food wastes will authorise all types of food waste to be accepted in the AD plant which the plant has been designed to process.</li> <li>• The combined volume will provide greater flexibility in liquid wastes received onsite.</li> <li>• The works approval assessed the AD plant capacity at 35,000 tonnes/year. The throughput should be increased to reflect this.</li> <li>• The Licence Holder has calculated that an additional 15,000 tonnes/year of green waste is required to undertake current outdoor composting operations as well as the application of digestate to green waste indoors.</li> </ul>	<ul style="list-style-type: none"> <li>• As part of DWER's consultation with the City of Cockburn, DWER was advised that the City is within an area that is subject the Biosecurity and Agriculture Management (Stable Fly) Management Plan 2016, which prohibits the storage and transport of poultry manure which has not been treated to AS 4454, or a measure approved under the Biosecurity and Agriculture Management Act 2007. Advice from Department of Primary Industries and Regional Development (DPIRD) indicates that no approval has been granted by DPIRD to accept this manure and based on information received from the Licence Holder, poultry manure accepted onsite has not been composted to AS 4454 prior to being received.</li> <li>• A general waste reference to manures has not been included however specific reference to cow and sheep manure is included into table as authorised feedstocks with a combined limit changed to 10,000 tonnes/year with poultry manure. Although poultry manure received onsite does not currently comply with DPIRD's requirements, this feedstock has remained on this Table as it is the Licence Holder's responsibility to ensure that they comply with all relevant approvals, and the authorisation of</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			<p>this feedstock does not authorise the Licence Holder to breach any other relevant approvals.</p> <ul style="list-style-type: none"> <li>• Specific waste types removed and replaced with 'solid food waste'. The Delegated officer considers that all types of food waste are suitable for processing in the AD plant and the level of environmental risk is not increased by the inclusion of a broad waste description.</li> <li>• Liquid waste volumes combined to an overall annual limit. This does not increase the current authorised throughput accepted at the Premises.</li> <li>• Solid waste entering AD plant increased to 10,000 – this is not an increase in throughput of the AD plant as the capacity was assessed at 35,000 tonnes/year under works approval W5311/2012/1 which is the limit authorised under this licence when incorporating the 25,000 tonnes/year of liquids.</li> <li>• The proposed increased throughput for green waste is not within the scope of the licence review and is considered by the Delegated Officer as an expansion to current operations. Application of digestate prior to April 2017 was undertaken as part of the outdoor operations with 20,000 tonnes/year of green waste. This has not been actioned and will require a separate licence amendment application to be submitted for assessment.</li> </ul>
2	<p><b>Condition 3</b></p> <ul style="list-style-type: none"> <li>• Extend duration of wastes being added to the</li> </ul>	<ul style="list-style-type: none"> <li>• Allow for sufficient time to process bulk wastes</li> </ul>	<ul style="list-style-type: none"> <li>• The works approval assessed wastes to be stored for 24 hours. Given the medium risk rating for odours from the Receiving Hall, the</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>AD process from 24 to 48 hours</p> <ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<p>design of the Receiving Hall (cool-room panels, operating under negative pressure, air extraction to biofilter) as well as the additional regulatory controls regarding waste to be stored within Receiving Hall and the requirement to only use the vehicle access door when vehicles are entering the building, the Delegated Officer has risk assessed that the increase to 48 hours will have minimal impact in regards to odour emissions and as a result, the duration has been changed to 48 hours.</p> <ul style="list-style-type: none"> <li>Condition has been modified in format to make it clear which wastes must be added to the AD process and no longer references the wastes that are not applicable to AD plant operations.</li> </ul>
3	<p><b>Table 2: monitoring and recording of inputs and outputs</b></p> <p>Change quantities to m<sup>3</sup> instead of tonnes</p>	<p>Products are sold in m<sup>3</sup> or litres. Conversion factors would need to be used if required to report in tonnes.</p>	<p>The Delegated Officer identified that the draft licence did not include a condition to require reporting of input and output data. Condition 5 has been included on the licence to request a summary of the annual inputs and outputs to determine compliance with the annual amounts specified in the licence.</p> <p>The recording of each input assists in determining compliance against the conditions of the licence (i.e. feedstock controls) and throughput authorised on the licence. As the licence specifies volumes in tonnes, the Licence Holder is required to report this in the same unit. Additionally prescribed premises categories are specified in tonnes as described in Schedule 1 of the EP Regulations and the licence mirrors this.</p> <p>Additionally, the requirement to record each load</p>



Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			entering and leaving the premises assists in determining environmental compliance in the event that complaints are received due to an odorous or dusty load and/or source.
4	<b>Inserted condition 5: input/output reporting</b> N/A	N/A	As per the comments above for point 2, a new condition (5) has been included on the Licence to require the annual reporting of input/output data required by condition 3. Only a general summary of data is required to be provided which is used to assess compliance against the conditions of the licence.
5	<b>Table 3: Infrastructure and equipment controls table</b> <ul style="list-style-type: none"> <li>• Change biogas generator capacity from 500kW to 1.2MW</li> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• The table did not reflect the correct capacity of the generators</li> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Table updated to reflect the increased capacity however the Delegated Officer identified that this is an increase of more than double the capacity assessed under works approval W5311/2012/1. This is part of an ongoing compliance investigation which is subject to confidentiality.</li> <li>• The details for the bagging station have been updated to reflect that each bagging plant is fitted with an air extraction unit.</li> </ul>
6	<b>Former condition 6: noise</b> The grinder and windrow turner were identified as the dominant noise sources in the Acoustic Assessment (2017). Condition 6 relates to not being able to operate the grinder and screener at the same time. Update condition to remove screener and relace with windrow tuner.	Update to accurately reflect dominant noise sources as the grinder and windrows turner	Condition updated to replace screener with windrow turner. Condition renumbered as 7.
7	<b>Inserted condition 8: noise emissions</b> Proposed relocation of grinder to a new location	The proposed new location enables noise emissions from the grinder to meet compliance with the EP Noise Regulations	As per the recommendations and findings of the 2017 acoustic assessment, as well as the Delegated Officer's review of the assessment, a new condition (8) has been included on the licence to specify that the grinder must only be

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			operated at a location specified in Schedule 1. The grinder when operated in this location was identified in the acoustic assessment as being complaint with the EP Noise Regulations.
8	<b>Inserted condition 9: noise emissions</b> N/A	N/A	As part of the Delegated Officer's review of the 2017 acoustic assessment, a new condition (9) has been included on the licence to specify that the grinder must not be operated between 7pm and 7am. This is to ensure that the grinder only operates during 'day time' hours which have been demonstrated as being complaint with the EP Noise Regulations when operating at the location required in condition 8.
9	<b>Former condition 7: biogas generators</b> Remove condition which prevents the concurrent operation of both biogas power generators	Air emissions data and modelling demonstrates that both generators can be operated concurrently below the relevant standard (NEPM for air quality).	Based on the Delegated Officer's review of the stack modelling for both biogas generators, this condition has been removed as the emissions from concurrently operating generators are at most (NOx) 43% of the NEPM for both background concentrations and premises operations.
10	<b>Inserted condition 11: odour emissions</b> N/A	N/A	A new condition (11) has been included in the Licence to specify that water used for dust suppression and outdoor composting processes must be treated prior to use. This condition assist in recuing odours from leachate re-use water.
11	<b>Table 4: storage requirements</b> N/A	N/A	A new storage requirement has been included on this table to address manures. This table now requires all manures to be stored within an enclosed building at all times prior to bagging operations or for use in the composting process as added nutrient content.
12	<b>Former condition 13 – outdoor composting</b> <ul style="list-style-type: none"> <li>Part (a) change of wording to remove reference to the require for windrows to be turned and replace with requirement to</li> </ul>	<ul style="list-style-type: none"> <li>Windrow construction and management need to be based on site operations, plant capacity, site setup (space) and processing techniques.</li> </ul>	<p>This condition has been split into two conditions (conditions 16 and 17) to reflect outdoor and indoor composting operations.</p> <ul style="list-style-type: none"> <li>Part (a) has not been amended as this</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>maintain aerobic conditions in windrows</p> <ul style="list-style-type: none"> <li>• Part (e) Remove reference to windrow dimensions and replace with "Windrows to be constructed to facilitate aeration, growth and multiplication of micro-organisms in the composting process."</li> <li>• Part (h) Modify digestate: greenwaste ratios based on recalculation of amount of digestate required for process. Also requested to replace the requirement to blend digestate with green waste using the windrows turner and change to blending with a loader</li> <li>• Part (i) Remove requirement that compost meets the physical and chemical requirements of AS 4454.</li> </ul>	<ul style="list-style-type: none"> <li>• Prescribing exact aeration methods and construction measurements of windrows may not provide for good environmental outcomes. For instance, prescribing windrows at 120m long for the Richgro site does not consider the size of the hardstand available for the composting activities. Further, the length does not affect the biological mechanisms and how compost is processed.</li> <li>• Revise volumes based on recalculation of digestate required.</li> <li>• There is no requirement in the EP Act or DWER legislation that prescribes composts meet the physical and chemical requirements set out in AS4454. AS4454 is a voluntary industry standard and producing products to AS accreditation is not a requirement.</li> </ul>	<p>condition specifically requires windrows to be turned and restricts operations to those that have been assessed as part of this licence review. Changes in compost processing (i.e. aeration flooring) have not been assessed and by requiring windrows to be turned, the licence reflects what has been assessed.</p> <ul style="list-style-type: none"> <li>• Part (e) also has not been changed. The windrow sizes specify the maximum dimensions and not the exact dimensions of windrows. These have been included on the licence to mitigate fire risk.</li> <li>• Condition 17, which addresses the digestate amounts, has been revised as per calculations in section 4.3.5.5 of the Decision Report. This condition also includes controls similar to those from outdoor composting but has been modified to specifically address the indoor process.</li> <li>• This requirement has remained on the licence. Please refer to point 15 below for additional context.</li> </ul>
13	<p><b>Inserted condition 18: indoor composting</b> N/A</p>	N/A	<p>A new condition (18) has been included on the licence in regards to when the indoor digestate blended compost is authorised to be moved outdoors for maturation. This condition includes a series of requirements that need to be met prior to being moved outside. The justification for these controls is included in the odour risk assessment (section 6.6 of Decision Report)</p>
14	<p><b>Inserted condition 19: indoor composting</b> N/A</p>	N/A	<p>Based on the regulatory controls outlined above for inserted condition 18, condition 19 has been</p>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			included on the licence requiring temperature, moisture content, oxygen and carbon dioxide to be monitored within each indoor compost windrow daily, with results recorded. This assists in confirming compliance with condition 18 to support when compost can be moved outside for maturation.
15	<b>Inserted condition 20 and new Table 5: compost standard</b> N/A	N/A	Based on the Licence Holder's comments for point 12 above regarding compost meeting the physical and chemical requirements of AS 4454, a new condition (20) and Table (5) have been included on the licence requiring the Licence Holder to undertake an assessment of all compost and blended soil products against the AS and where processes/results deviate from the AS, provide evidence to demonstrate its suitability for end use with reference to what testing regimes and controls are in place to support the outcome. The requirement to meet AS 4454 may be reassessed pending the findings of the product assessment.
16	<b>Former Table 5: Ground water monitoring</b> Request to undertake groundwater monitoring on a biannual basis instead of the proposed quarterly schedule	<ul style="list-style-type: none"> <li>Based on the technical assessments and recommendations by DWER technical experts with respect to bi-annual monitoring, Richgro requests that a review of analytes required for quarterly monitoring be undertaken.</li> <li>Richgro will sample for these required analytes on a quarterly basis, and requests that sampling of the broader suite of analytes be conducted on a bi-annual basis.</li> </ul>	Quarterly monitoring is still required on the Licence however this frequency has been amended to reduce sampling to bi-annually after the first four sampling rounds. The quarterly monitoring is required to provide a representative data set for seasonal trends which is not currently available given the insufficiency with the existing monitoring bore network. Table renumbered as 6.
17	<b>Inserted condition 30: mosquito larvae</b> N/A	N/A	Based on concerns raised by community members as well as information from the City of

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			Cockburn, a new condition (30) has been included on the licence requiring the ponds and pond sumps to be free of mosquito larvae at all times. This condition has been included on the licence to require that no mosquito larvae are present within the ponds or pond sumps. This condition assists in preventing mosquito breeding. Mosquitoes pose a risk to amenity. Please refer to section 6.10 of the Decision Report.
18	<p><b>Former Table 7: air emissions monitoring</b></p> <ul style="list-style-type: none"> <li>• Increase limit of NO<sub>x</sub> to from 150 mg/m<sup>3</sup> to 600mg/m<sup>3</sup></li> <li>• Increase limit of carbon monoxide from 100mg/m<sup>3</sup> to 1000mg/m<sup>3</sup></li> <li>• Increase stack temperature from 200 °C to 300°C</li> <li>• Provide more detail regarding a minimum number of test runs required to be undertaken</li> <li>• NO<sub>x</sub> and CO units of measurement to be updated from µg/m<sup>3</sup> to mg/m<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Previously measured results of 520 mg/m<sup>3</sup> (50%) and 400 mg/m<sup>3</sup> (100%). These concentrations have been approved as medium risk (43% of NEPM). This limit cannot be achieved easily as NO<sub>x</sub> is a product of combustion regardless of efficiency.</li> <li>• Previously measured at approximately 600mg/m<sup>3</sup>. These concentrations have been approved as low risk (4.3% with background of NEPM). Although CO can be improved by tuning the generators to run more efficiently this limit cannot be achieved easily and unsure of purpose given the low risk rating.</li> <li>• To allow for tuning and possible efficiencies to be made in the combustion process to control the emissions.</li> <li>• Make it clear what the minimum requirements are for number of test runs.</li> <li>• Typographical error in units</li> </ul>	<ul style="list-style-type: none"> <li>• Based on the stack modelling data (August 2017) provided as part of the licence review and monitoring data available, the Delegated Officer has amended this table to state the below changes to emission limits, which were modelled by the Licence Holder (August 2017): <ul style="list-style-type: none"> <li>○ NO<sub>x</sub>: 600 mg/m<sup>3</sup></li> <li>○ CO: 1000 mg/m<sup>3</sup></li> </ul> </li> <li>• Temperature has been updated to read 'between 145 and 300'. This reflects the temperature used in the modelling (145) and the Licence Holder's request (300) which is considered reasonable for increased combustion.</li> <li>• Numbers of test runs should be undertaken in accordance with each relevant standard for methodology.</li> <li>• Units updated as per Licence Holder's request.</li> <li>• Table renumbered as 8.</li> </ul>
19	<b>Former condition 28 and Table 9: Noise monitoring</b>	N/A	The Licence Holder has undertaken an acoustic

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	N/A		<p>assessment with the report provided as part of the comments on the draft documents which meets the objectives of the former proposed noise monitoring condition.</p> <p>Condition 9 and Table 28 have been removed from the licence based on the above.</p>
20	<p><b>Table 10: Hydraulic conductivity testing requirements</b> Increase timeframe to undertake hydraulic conductivity testing of the limestone hardstand from two to four months</p>	Allow additional time to sufficiently source, finance and undertake testing	The Delegated Officer considers that two months is sufficient to install the bores when considering that the draft licence conditions requiring bore installation were provided to the Licence Holder in early September 2017 however given that the holiday period is within the specified two month timeframe which may impact on availability of contractors, this timeframe has been extended to three months.
21	<p><b>Table 11: groundwater monitoring bore construction</b> Increase timeframe to install monitoring bores from two to four months</p>	Allow additional time to sufficiently source, finance and install bores	<p>A period of two months to install bores is consistent with installation timeframes specified on similar licences.</p> <p>Given the Premises' location within a priority 2, and adjacent to priority 1 Public Drinking Water Source Area, it is imperative that an accurate seasonal data set is obtained as a matter of priority to allow an accurate assessment of potential impacts to groundwater from premises operations.</p> <p>As per comments in point 20 above, The Delegated Officer has this timeframe extended to three months.</p>
22	<p><b>Table 12: Biofilter requirements</b> N/A</p>	N/A	This table has been updated to include the requirement for the Licence Holder to notify the

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			CEO in writing within 48 hours of the biofilter testing being undertaken. This notification ensures DWER is aware that all biofilter requirements have been undertaken prior to indoor composting operations being undertaken.
23	<b>Inserted condition 38: notification</b> N/A	N/A	A new condition (38) has been included on the licence to require the Licence Holder to notify the CEO in writing within 24 hours of indoor composting activities commencing. This notification ensures DWER is aware of and able to choose whether to attend the premises when indoor composting commences.
24	<b>Table 13: Authorised emissions table</b> <ul style="list-style-type: none"> <li>• Condition 3: Extend the holding time of feedstock to 48 hours instead of 24 hours prior to entering the AD plant.</li> <li>• Condition 6: Remove reference to compliance with condition 6 in regards to odour emissions.</li> <li>• Typographical error: update table number from 12 to 13</li> </ul>	<ul style="list-style-type: none"> <li>• An increase to two working days allows more time to process bulk waste or in the event of equipment maintenance or breakdowns.</li> <li>• Condition 6 relates to noise emissions and not odour emissions.</li> <li>• This table is incorrectly listed as Table 12 as the Table prior to this, biofilter requirements' is also labelled Table 12.</li> </ul>	<ul style="list-style-type: none"> <li>• The works approval assessed wastes to be stored for 24 hours. Given the medium risk rating for odours from the Receiving Hall, the design of the Receiving Hall (cool-room panels, operating under negative pressure, air extraction to biofilter) as well as the additional regulatory controls regarding waste to be stored within Receiving Hall and the requirement to only use the vehicle access door when vehicles are entering the building, the Delegated Officer has risk assessed that the increase to 48 hours will have minimal impact in regards to odour emissions and as a result, the duration has been changed to 48 hours in condition 3.</li> <li>• Condition 6 relates to noise emissions. As a result, compliance with condition 6 in regards to odour emissions is not applicable and has been removed from Table 12.</li> <li>• Table renumbered to 13.</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
25	<b>Schedule 1: Maps</b> N/A	N/A	The Premises Map has been updated to include the 'Grinder location'
26	<p><b>Schedule 2: General description</b></p> <ul style="list-style-type: none"> <li>• Remove reference to specific wastes accepted at Premises and replace with a general waste overview</li> <li>• Note that alcohol waste has not been accepted onsite since April 2017</li> <li>• Remove reference to the percentage of chicken manure used in composting process</li> <li>• Remove reference to re-use leachate water being used and replace with treated leachate/stormwater from Pond 4</li> <li>• Update pasteurisation sentence to state that windrows increase to a period of 55°C for a period of 'at least' three days, noting the word 'days' was omitted in this sentence.</li> <li>• N/A</li> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• As per comments above in reference 1</li> <li>• Alcohol wastes not accepted onsite since April 2017</li> <li>• Specific percentage is commercially sensitive.</li> <li>• Clarify that the water used in the composting process is treated.</li> <li>• The composting windrows may be increased to 55°C for more than 3 days</li> <li>• N/A</li> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Specific waste types removed and replaced with general description of solid food waste</li> <li>• Comments regarding alcohol have not been amended as the Licence Holder has advised of the intent to accept it onsite.</li> <li>• Percentage of chicken manure has been removed.</li> <li>• Section updated to reflect that treated leachate/stormwater is used in composting process.</li> <li>• Sentence updated to reflect a period of at least three days for pasteurisation (outdoor composting).</li> <li>• Based on similar comments received from the Licence Holder in regards to the Decision Report, the Delegated Officer has also removed reference to moisture being added to "speed up the composting process" and replaced with information regarding microbial activity.</li> <li>• Section for indoor composting has been included.</li> </ul>
<b>Comments on draft Decision Report</b>			
27	<b>Section 2</b> Include detail that both bagging plants are fitted with air extraction units	Update to reflect what has been installed onsite.	The decision report has been updated to reflect this. Table 3 of Condition 5 has also been updated in the Licence to reflect this.



Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
28	<b>Section 3.1: Table 2</b> Change biogas generator capacity from 500kW to 1.2MW	The table did not reflect the correct capacity of the generators	This has been updated as per the comments in point 3 above. Section 4.2.5, in regards to works approval compliance, has also been amended to reflect the increase in capacity.
29	<b>Section 3.2: Table 3</b> <ul style="list-style-type: none"> <li>• Include cow and sheep manure into table and have a combined total input of 10,000 tonnes/year</li> <li>• Remove reference to specific waste food types and include a generalised description</li> <li>• Include grease trap wastes from fruit/juice manufacturers</li> <li>• Note that alcohol waste has not been accepted onsite since April 2017</li> </ul>	As per comments in point 1 above.	<ul style="list-style-type: none"> <li>• Cow and sheep manure included into table as authorised feedstock. This table does not list authorised volumes of waste and therefore the request to include have a total of 10,000 tonnes/year is not applicable to this section.</li> <li>• Specific waste types removed and replaced with 'solid food waste'.</li> <li>• The Delegated Officer considers that waste from fruit/juice manufactures is already addressed in the category of 'Food and beverage processing wastes' and therefore has not been explicitly stated as requested.</li> <li>• Comments regarding alcohol have not been amended as the Licence Holder has advised of the intent to accept it onsite.</li> </ul>
30	<b>Section 3.2.2: AD Plant</b> Request change of wording to the description for the AD plant to better clarify the waste acceptance and processing operations	Update section to provide more accurate description of premises operations	Updated to reflect the Licence Holder's request. Note that exact requested wording has not been used.
31	<b>Section 3.2.2: Outdoor composting</b> <ul style="list-style-type: none"> <li>• Requested update to state that pine bark is shredded onsite</li> <li>• Remove reference to re-use leachate water being used and replace with treated leachate/stormwater from Pond 4</li> <li>• Request change of wording from "moisture is added to speed up the composting process"</li> </ul>	Update to detail accurate site operations	<ul style="list-style-type: none"> <li>• Updated to reflect the Licence Holder's request</li> <li>• Updated to reflect the Licence Holder's request</li> <li>• Sentence updated to state: "...moisture is added to promote conditions suitable for decomposition of material by micro-organisms". The Delegated Officer considers</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>to "Moisture is added to start and maintain the composting process and facilitate an environment for micro-organisms to decompose materials in the compost mix."</p> <ul style="list-style-type: none"> <li>• Update pasteurisation sentence to state that windrows increase to a period of 55°C for a period of 'at least' three days</li> <li>• Update section to specify that only potable bore water is used in composting process after pasteurisation.</li> <li>• Include text to state that the products composted to attain AS accreditation are done so in compliance with the Standards processes and audited under Australian Standards.</li> </ul>		<p>that this sufficiently addresses the Licence Holder's request.</p> <ul style="list-style-type: none"> <li>• Sentence updated to reflect a period of at least three days for pasteurisation.</li> <li>• Updated to state only potable bore water used after pasteurisation.</li> <li>• Updated to reflect products are audited under AS.</li> </ul>
32	<p><b>Section 3.2.2: Indoor composting</b> N/A</p>	N/A	<p>The Delegated Officer identified that a description of the indoor composting was not included on the original draft documents. This section has now been included into the Decision Report.</p>
33	<p><b>Section 3.2.4</b> Ponds are proposed to be surveyed with results provided to DWER in November 2017</p>	N/A	<p>Noted in Decision Report.</p>
34	<p><b>Section 3.2.5</b> Include detail that both bagging plants are fitted with air extraction units</p>	<p>Update to reflect what has been installed onsite.</p>	<p>Updated to reflect the Licence Holder's request</p>
35	<p><b>Section 4.1.1: planning approvals</b></p> <ul style="list-style-type: none"> <li>• "Dam 4 captures predominantly stormwater as opposed to leachate (as per section 3.2.4). Update as per as per section 3.2.4 of the Decision Report."</li> <li>• Update section to remove duplication of text.</li> </ul>	<p>There appears to be a duplication of text in regards to what has been applied for under planning approvals.</p>	<ul style="list-style-type: none"> <li>• This section has been updated to remove the word 'leachate' in reference to Pond 4.</li> <li>• The Delegated Officer does not consider there to be a duplication of text. One section describes what infrastructure was not addressed through planning approval and</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			another section described what DWER understands has been submitted to the City of Cockburn seeking planning approval. This request has not been actioned.
36	<p><b>Section 4.1.2: water approvals</b> Request this section is updated to reflect that the Licence Holder has been in discussions with former Department of water regarding ways to reduce water usage, with these submitted to DWER for consideration.</p>	Update to provide overview of what is being proposed to reduce water use.	It is assumed this specifically refers to reduction of ground water use. DWER has not received any proposal or applications for assessment under the EP Act or RIWI Act in regards to reducing water usage onsite. Text has been amended to note that licence holder is investigating options to reduce water usage.
37	<p><b>Section 4.2.2: Part IV history</b></p> <ul style="list-style-type: none"> <li>• Licence Holder did not obtain the premises until 1998. Section to be updated to reflect this</li> <li>• Update paragraph to advise: "The DWER Delegated Officer advised during a meeting with Richgro (March 2017) and in subsequent correspondence (September 2017) that applications were not required as these matters were considered given the broad scope of the review."</li> </ul>	<ul style="list-style-type: none"> <li>• Update section to be reflect accurate history of premises</li> <li>• Update section to reflect what Licence Holder was advised</li> </ul>	<ul style="list-style-type: none"> <li>• Updated to reflect the Licence Holder's request.</li> <li>• Section has not been updated as the paragraph is correct that no applications were received and that the Delegated Officer has considered these matters as part of the review.</li> </ul>
38	<p><b>Section 4.2.3: compliance inspections</b></p> <ul style="list-style-type: none"> <li>• Update section to state that Controlled Waste categories L100 and L150 were not received at the premises as the transporter used incorrect waste codes.</li> <li>• Update section to specify that "potential breaches have been addressed resolved given that digestate is being transported off site, alcoholic waste is not being accepted, manures and liquid waste are not being</li> </ul>	<ul style="list-style-type: none"> <li>• Update section to reflect this matter has been addressed.</li> <li>• Update section to show what action has been undertaken to resolve compliance</li> <li>• Update section to state that matters have been closed.</li> </ul>	<ul style="list-style-type: none"> <li>• Updated to reflect the Licence Holder's request.</li> <li>• Updated section to reflect what actions have been taken by Licence Holder to address non-compliances</li> <li>• Section has been updated to reflect that 2014 non-compliances have been rectified however the other matters are still subject to an ongoing confidential investigation and therefore this</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>stored longer than 48 hours, Pond 4 captures stormwater and a retrospective development application has been made to the City of Cockburn.”</p> <ul style="list-style-type: none"> <li>• “DWER Compliance Branch as advised that investigations are not ongoing and have been closed from 2014 and 2016.”</li> </ul>		request has not been actioned.
39	<p><b>Section 4.2.4: AER and AACR Reports</b> Update section to remove typographical error</p>		Error corrected
40	<p><b>Section 4.2.5: works approval compliance</b></p> <ul style="list-style-type: none"> <li>• Request clarification regarding why DWER does not consider that the Commissioning Odour Survey was not undertaken during normal conditions.</li> <li>• The Decision Report states that a comparison between pre AD plant results and results during commissioning was not undertaken. Request that this section be updated to reflect that a comparison was undertaken.</li> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Obtain understanding of DWER’s position</li> <li>• Update to accurately reflect what was undertaken</li> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Section updated to provide more clarity regarding comments.</li> <li>• This section has not been updated as DWER’s Air Quality reviewed the survey and identified that it did not present any assessment or analysis of the comparison of the two sets of data based on the view that the findings and conclusions for both baseline and commissioning odour assessments in the field are too limited and at times inaccurate.</li> <li>• As identified during the licence review, a different model and capacity of biogas power generators were installed at the Premises in contravention of what was authorised under the works approval. This section has been updated to reflect this non-conformance.</li> </ul>
41	<p><b>Section 4.2.6: compliance history check</b> Update figure 1 to show all complaints received from December 2013 to June 2017 as the figure only reflects complaints received since 2015.</p>	Provide better overview of complaints history	It is noted that no odour complaints were received prior to August 2015 which is why these were not included into Figure 1. The description of Figure 1 has been amended to state complaints received between August 2015 to June 2017 and noting no odour complaints received prior to December 2013.

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
42	<b>Section 4.3.2: Noise</b> N/A	N/A	This section has been updated to reflect the findings of the 2017 acoustic assessment.
43	<b>Section 4.3.5.1: key findings for review of odour and air emissions</b> <ul style="list-style-type: none"> <li>• Finding 2 - This comment was unclear however the Delegated Officer has interpreted it as a request to update that the Commissioning Odour Survey addresses the risk of digestate applied to outdoor windrows and that the Technical Expert Report – Odour states that 'mixing of digestate into the windrow is an unlikely cause of odour'.</li> <li>• Finding 5 – discrepancies between modelled and monitored data is due to a different generator being installed onsite which resulted in slight changes to emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Update section to reflect what was undertaken onsite and what the Technical Expert Report – Odour states.</li> <li>• Update section to explain the reason for the differences.</li> </ul>	<ul style="list-style-type: none"> <li>• The Delegated Officer could not find anything in the Odour Survey to suggest that digestate was considered, or being applied at the time the field odour survey was undertaken. Additionally, DWER's Technical Expert Report – Odour was not the sole document used in determining these findings. Therefore, this section has not been updated.</li> <li>• Section 4.3.5.2 has been updated to reflect the Licence Holder's rationale for the discrepancies.</li> </ul>
44	<b>Section 4.3.5.2: review of remodelled stack data</b> <ul style="list-style-type: none"> <li>• Finding 1 – N/A</li> <li>• Finding 3 – N/A</li> <li>• Findings 5 and 9 – “All pollutants low/negligible and well under (&lt;10%) of NEPM GLC criteria, with exception of NO<sub>x</sub> (NO<sub>2</sub>) 1 hour (max) which showed Generator was only 16% (33% including background levels).”</li> <li>• Finding 7 – “There was a data entry error in the CO emissions where 0.581 g/s was entered in the Ausplume file as opposed to 0.81 g/s. Therefore, predicted CO GLCs were 1.394 times higher than stated in updated model in the Air assessment dated</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> <li>• N/A</li> <li>• Unclear</li> <li>• Unclear</li> </ul>	<ul style="list-style-type: none"> <li>• This point has been updated to state that the change in biogas generator models caused a discrepancy between the original modelled data and the monitoring data obtained from the plant.</li> <li>• This point, which originally specified that modelling had not been undertaken for both generators operating at the same time, has been removed. Additional remodelling data was provided for the two generators.</li> <li>• It is unclear what the Licence Holder has requested to be amended for this section in regards to findings 5, 7 and 9. This section has been updated where applicable to reflect the remodelled data provided for two stacks.</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>11th August. For the generator by itself, predicted maximum 8-hour average CO concentrations at or outside the plant boundary would be 86 ug/m<sup>3</sup> instead of 62 ug/m<sup>3</sup> stated. That is 0.76% of the criteria, instead of 0.55% (This was rounded up to 0.6% in the assessment). Including background concentrations this would be a total of 461 ug/m<sup>3</sup> instead of 437 ug/m<sup>3</sup> stated. This error translates to 4% of the criteria instead of the previously stated 3.9%."</p>		
45	<p><b>Section 4.3.5.3: review of odour complaints</b></p> <ul style="list-style-type: none"> <li>• "State when review of odour complaints undertaken "...from June 2016 to ...".</li> <li>• "Tabulate daily wind direction and speed against complaints received, to present a less generalised collation of information."</li> </ul>	<ul style="list-style-type: none"> <li>• This section is not completed with an end date. Updates required reflecting the end date.</li> <li>• "The BoM records wind directions and speed which can be correlated daily against complaints received. Consequently, more accurate information can be tabulated pertaining to potential odour complaints."</li> </ul>	<ul style="list-style-type: none"> <li>• This section has been updated to include an end date (June 2017).</li> <li>• The Licence Holder's request has not been actioned as the information provided in this section is meant to represent a snapshot of occasions when multiple complaints were received. This section has been updated to reflect that.</li> </ul>
46	<p><b>Section 4.3.5.5: water balance assessment</b> Update section with correct figures</p>	Update to reflect accurate data	Section updated incorporating updated capacity of Composting Shed and knowledge of composting processes undertaken in this shed.
47	<p><b>Section 5.4: Groundwater</b></p> <ul style="list-style-type: none"> <li>• Include information to state that a site in proximity to Richgro has been classified under the Contaminated Sites Act 2003 as 'remediated for restricted use' in regards to groundwater contamination.</li> <li>• "Update paragraph to include the scope of the EVA Environmental report was to respond to specific queries made to Richgro to the City of Cockburn, and did not include a</li> </ul>	<ul style="list-style-type: none"> <li>• It is unclear why this is requested to be included.</li> <li>• Report was provided for City of Cockburn purposes and only included an overview for regional and not local groundwater and this should be reflected in Decision Report.</li> </ul>	<ul style="list-style-type: none"> <li>• The site is located up-hydraulic gradient and is therefore not considered to have any impact on the Richgro Premises. This request has not been actioned.</li> <li>• Section has been updated to remove reference to the EVA Environmental report.</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	localised assessment of groundwater. Data reported to the city in November 2016 was reviewed and accepted by the Planning Department on November 17, 2016."		
48	<p><b>Table 9: Identification of key emissions during operation</b></p> <ul style="list-style-type: none"> <li>Update this Table to change the level of impacts to Lukin Swamp – relates to emissions of dust and risk for overtopping of ponds.</li> <li>Request updates to consider that ponds are designed to a 1 in 10 year ARI event.</li> </ul>	Lukin swamp has been dry since 1998 and therefore impacts to surface water would not apply.	<ul style="list-style-type: none"> <li>Regardless of whether Lukin Swamp has been dry, the values of the swamp as being a nature reserve which is groundwater fed are maintained through the risk assessment and remain valid for the purposes of the Decision Report. The impacts to Lukin Swamp have not been updated in Table 9.</li> <li>Table 9 is an initial risk screening table to consider potential emissions. Controls, such as pond design, are not considered in this initial table and are factored into the relevant risk assessments. Therefore, this request has not been actioned.</li> </ul>
49	<p><b>Section 6.5.3: proponent controls for dust</b></p> <ul style="list-style-type: none"> <li>Update Table 12 to include air extraction units fitted to bagging plants.</li> <li>Include windsocks as a control for monitoring wind direction and speed.</li> <li>Include that SOP's for dust are employed at the Premises.</li> </ul>	Provide a more accurate overview of controls for dust	<ul style="list-style-type: none"> <li>Updated to reflect all of the Licence Holder's requests in regards to this section.</li> </ul>
50	<p><b>Section 6.5.5: Consequence (residential communities) for dust emissions</b></p> <p>Update typographical error referring to section 7.5.2 and replace with 6.5.2</p>	Typographical error to be corrected	Error corrected
51	<p><b>Section 6.6.1: general hazard characterisation (odour)</b></p> <ul style="list-style-type: none"> <li>Update section on 'indoor pre-treatment of</li> </ul>	<ul style="list-style-type: none"> <li>Provide a more accurate overview of leachate collection process</li> </ul>	<ul style="list-style-type: none"> <li>Updated to reflect all of the Licence Holder's request</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>feedstock' to advise that the tarpaulin around the biofilter has been secured.</p> <ul style="list-style-type: none"> <li>• Update 'outdoor composting windrows' to advise that treated water from Pond 4 is applied to windrows.</li> <li>• Update 'Leachate collection system' to clarify that Ponds 1 and 2 capture leachate from composting process, Pond 3 captures run-off from blueberry hothouse.</li> <li>• The statement "water from pond 4 is re-used in the composting process as a substitute for digestate application" is incorrect. Prior to commissioning of the AD Plant, water was added from pond 4 to the composting process.</li> <li>• Update section to state residence time in digesters in 30 days.</li> <li>• Update section to state that AD tanks are fed in at top and out at the bottom.</li> <li>• Update to include information that testing of the AD plant that no more than 5% of biogas is left in the by-product (digestate).</li> <li>• Request update to reflect that DWER's Technical Expert Report – Odour does not support the Decision Report's claim that "Feedstock in ADF tank may not be broken down due to low residence time in the ADF tank."</li> <li>• Update paragraph regarding EVA Environmental report. "The statement that the report contains inaccuracies and</li> </ul>	<ul style="list-style-type: none"> <li>• As above</li> <li>• As above</li> <li>• As above</li> <li>• Provide a more accurate overview of AD process</li> <li>• As above</li> <li>• As above</li> <li>• Report was provided for City of Cockburn purposes only.</li> </ul>	<ul style="list-style-type: none"> <li>• Updated to reflect all of the Licence Holder's requests</li> <li>• As part of the licence review process and in discussions with City of Cockburn, there appears to be several maps of the ponds which are named differently from each other. For the purposes of pond names/locations, the Decision Report and licence reflect the names/locations depicted in Attachment 2 of the Decision Report. From the Delegated Officer's understanding of the ponds obtained during site visits and discussions with the Licence Holder, this section of the Decision Report is accurate. Additionally, the Delegated Officer understands that Pond 4 was not constructed prior to the AD plant so therefore water from Pond 4 could not have been added to the composting process prior to commissioning of the AD plant. Therefore, this section has not been changed.</li> <li>• Sentence included stating that Licence Holder has advised of 30 day residence time.</li> <li>• The Delegated Officer considers that this section sufficiently describes that AD tanks are fed and that it is not important to include how they are fed are drawn from tanks. Therefore, this request has not been actioned.</li> <li>• This has not been incorporated as the requested level of detail is not required for this section.</li> <li>• Sentence has been slightly modified to address that it is possible that feedstocks may not be retained for a sufficient length of time.</li> </ul>



Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>inconsistencies is incorrect. Information supplied was transparent and a true representation of all information and data supplied, investigated and collated for responses to email correspondence to the City of Cockburn."</p>		<p>As this is a possibility, it has predominantly remained as it is.</p> <ul style="list-style-type: none"> <li>The sentence regarding inconsistencies and inaccuracies has been removed. All other text has remained.</li> </ul>
52	<p><b>Section 6.6.3: Table 13</b></p> <ul style="list-style-type: none"> <li>Update table to reflect air extraction units on bagging plant.</li> <li>Include windsocks as a means of monitoring wind speed and direction.</li> <li>Include SOP's are used for managing odour emissions onsite.</li> </ul>	<p>Update to accurately reflect what odour management controls are used at the Premises</p>	<ul style="list-style-type: none"> <li>Table 13 has been updated to reflect air extraction unit on bagging plants.</li> <li>A sentence regarding windsocks is already included in section 6.6.3 and therefore has not been repeated into Table 13.</li> <li>Sentence included into section 6.6.3 to specify that SOP's are followed for odour mitigation however this has been placed into a more appropriate section and not into Table 13 as requested.</li> </ul>
53	<p><b>Section 6.6.3: Proponent controls</b></p> <ul style="list-style-type: none"> <li>Requested this section be updated to state that Richgro monitor meteorological conditions to consider impacts to residents.</li> <li>"Update point 1 to: Feedstocks are combined with water, and windrows constructed to encourage natural air flow and introduce air for effective composting. Composting operations are managed to minimise turning of windrows whilst effectively introducing oxygen. Turning of the windrows, especially during pasteurisation represents the highest potential for odour emissions."</li> <li>"Add point: All equipment and machinery</li> </ul>	<ul style="list-style-type: none"> <li>Include additional information about actions undertaken</li> <li>Provide more detail on site processes</li> <li>Provide more detail about onsite controls</li> <li>As above</li> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>This section already adequately addresses this and therefore no additional comments have been included.</li> <li>This level of detail is not required for this section. The Delegated Officer considers that sufficient detail exists in this section and therefore this change has not been made. However, this sentence has been updated to reflect that treated leachate/stormwater is applied to windrows.</li> <li>Updated to reflect all of the Licence Holder's request</li> <li>This is already included and therefore has not been actioned.</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>regularly serviced and maintained.”</p> <ul style="list-style-type: none"> <li>• “Add point: SOPs are followed for outdoor composting processing and AD Plant operations.”</li> </ul>		
54	<p><b>Section 6.6.4: key findings for odour emissions</b></p> <p>“DWER has data on the number of complaints received over the 12 month period indicated. ‘Significant’ in terms of odour complaints is not defined in the ‘Odour Methodology Guideline’ (DEP, 2002).”</p>	Update to state number of complaints	This section does not relate to the Odour Methodology Guideline and relates to the Delegated Officer’s findings. This section has been modified to state that “A significant number of odour complaints were received...” The Licence Holder’s request has not been actioned as it is the view of the Delegated Officer that is being provided.
55	<p><b>Section 6.6.6: likelihood of consequence for odour</b></p> <ul style="list-style-type: none"> <li>• “The statement “based on the high number of odour complaints” should be rephrased to “based on the nature of the odour complaints” for these sections.</li> <li>• “DWER has specific data on the number of complaints received which should be stated, as ‘high’ is not defined in the ‘Odour Methodology Guideline’ (DEP, 2002).”</li> <li>• “The context of the number of complaints received in terms of the length of Richgro operations at the site also needs to be given, that is, number of complaints received over the period of operations on site from 1998.”</li> <li>• Update the likelihood of odours from the bagging station to rare given the controls that are in place.</li> <li>• Both outside compost manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>• Update to reflect the nature of complaints received.</li> <li>• Update to include specific number of complaints.</li> <li>• Update to provide more context surrounding complaints history.</li> <li>• Update to reflect Licence Holder’s view on likelihood</li> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• This section directly relates to likelihood of the consequence occurring. A high number of odour complaints were received which is directly related to the likelihood description and therefore this section has not been changed.</li> <li>• This section does not relate to the Odour Methodology Guideline and therefore the Delegated Officer considers that the description of ‘a high number of odour complaints’ is accurate. Therefore this request has not been actioned.</li> <li>• As per the first comment above, this section directly relates to likelihood of the consequence occurring. A high number of odour complaints during the 2016 - 2017 financial year which has been considered as part of this review. Although noted that odour complaints were not received prior to August 2015, there have since been a significant number of complaints received which have</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>likelihood sections refer to there being a lack of odour complaints. Update to reflect specific number of complaints received in the specific time frame.</p> <ul style="list-style-type: none"> <li>N/A</li> </ul>		<p>contributed to this review and are essential to establishing frequency. This request has not been actioned however an additional point has been made into section 6.6.4 to establish the previous lack of complaints.</p> <ul style="list-style-type: none"> <li>The risk assessment has considered the Licence Holder's controls and has determined a likelihood of 'unlikely' for the bagging station. Although fitted with air extraction units, these do not treat the odours. On site visits, the doors to the bagging station have been open. Manure products are bagged in this location. All of these contribute to the Delegated Officer's determination and therefore this request has not been actioned.</li> <li>This section has been updated to align with the wording in the other likelihood descriptions.</li> <li>A likelihood assessment for Indoor Composting has been included into this section as it was previously not included but is required for the risk assessment.</li> </ul>
56	<p><b>Section 6.6.7: Overall rating for odour</b> N/A</p>	N/A	<p>An overall rating for Indoor Composting has been included into this section as it was previously not included but is required for the risk assessment.</p>
57	<p><b>Section 6.7.1: leachate general overview</b></p> <ul style="list-style-type: none"> <li>Update section to reflect that Lukin Swamp has been dry and therefore contamination of surface water should not form part of risk assessment.</li> <li>Update section to reflect that "Pond 4 uses water captured from stormwater runoff, and leachate pumped from Ponds 1 to 3 is treated</li> </ul>	<ul style="list-style-type: none"> <li>Update section to reflect historical dryness of Lukin Swamp.</li> <li>Reflect what is occurring at the Premises.</li> <li>Clarify that liquid wastes are not used in outdoor composting.</li> </ul>	<ul style="list-style-type: none"> <li>As per point 48 above, the values of the swamp as being a nature reserve which is groundwater fed are maintained through the risk assessment and remain valid for the purposes of this assessment. Therefore, this request has not been actioned.</li> <li>This section does not address the ponds and</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>prior to disposal to Pond 4.”</p> <ul style="list-style-type: none"> <li>Update section to make it clear that liquid wastes are not blended into outdoor composting windrows.</li> </ul>		<p>therefore this request is not relevant to this section.</p> <ul style="list-style-type: none"> <li>Section clarified to specify that liquid wastes may generate leachate in the event of spills.</li> </ul>
58	<p><b>Section 6.7.3: proponent controls for leachate</b> N/A</p>	N/A	This section has been updated to address the controls within the composting shed.
59	<p><b>Section 6.8.3 – proponent controls for fires</b> “Revise sentence beginning: “Compost windrows ...” to The composting process is undertaken following production specific SOPs and management practices, and organic soil products are composted in accordance with Australian Standards. The composting process ‘critical control points’ are managed to mitigate the occurrence of temperatures elevating to a point where fire becomes a risk. This includes ensuring windrows are aerated and have adequate moisture, monitoring temperatures throughout the process and ensuring all the ‘mix’ is managed to achieve pasteurisation. Production management practices combined with over 20 years’ knowledge and experience of the production Site Supervisor, assist in mitigation of potential fire risks.”</p>	Update section to include more detail on fire risk is managed	The Delegated Officer considers that this section sufficiently addresses the controls onsite and does not require the level of detail requested by the Licence Holder. Therefore, this section has not been updated.
60	<p><b>Section 6.9.4: key findings for point source air emissions</b> N/A</p>	N/A	Section updated to incorporate findings of the August 2017 remodelled stack data for two generator stacks.
61	<p><b>Section 6.9.7: Overall rating for point source air emissions</b> It is unclear what action the Licence Holder has requested in regards to this section although it</p>	Unclear	The consequence of point source air emissions (section 6.9.5) outlines the worst case scenario that could occur from air emissions. Although modelling/monitoring data shows low emission

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<p>appears that they are requesting the consequence (section 6.9.5) be downgraded from major to moderate although this will not have an impact on the overall risk rating for air emissions.</p>		<p>rates, this section considers what could result if controls do not function correctly. The consequence for this section has not been modified.</p> <p>The likelihood of point source air emissions (section 6.9.6) considers what controls are in place to prevent the consequence occurring. Based on the modelling/monitoring data, the Delegated Officer has reassessed this and has determined that the major consequence of point source air emissions would only occur in exceptional circumstances, and therefore this has been amended from 'unlikely' to 'rare'.</p> <p>The change in likelihood has not impacted on the overall risk rating which remains as 'medium'.</p>
62	<p><b>Table 17: Risk assessment summary</b></p> <ul style="list-style-type: none"> <li>• Noise emissions – update to include additional controls undertaken onsite</li> <li>• Dust emissions – update to include additional controls undertaken onsite</li> <li>• Fires - update to include additional controls undertaken onsite</li> </ul>	<ul style="list-style-type: none"> <li>• Update to include full range of controls implemented at the Premises</li> <li>• As above</li> <li>• As above</li> </ul>	<p>Updated to reflect Licence Holder's request</p>
63	<p><b>Section 7.3.5: Point source air emissions management</b></p> <ul style="list-style-type: none"> <li>• Remove requirement that only one biogas generator can operate at any one time.</li> <li>• Update section to reflect that air emissions monitoring with specified emissions limits is also required under the licence.</li> </ul>	<ul style="list-style-type: none"> <li>• "Evidence from the Air Assessment (both generators modelled) showing compliance to NEPM guidelines is assumed to provide information in assessing the risk and this condition can be removed.</li> <li>• Periodic monitoring is required to confirm that the emissions to air from Point sources does not significantly increase from assessed/modelled which could in</li> </ul>	<p>This section has been updated to reflect the Licence Holder's request.</p>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
		turn cause an exceedance to the NEPM criteria and have an adverse effect on the surrounding area."	
64	<p><b>Section 7.1.1: feedstock types</b></p> <ul style="list-style-type: none"> <li>Remove reference to specific waste food types and include a generalised description as well as including cow and sheep manure.</li> <li>Update the grounds to state that monitoring and measurement controls are in place in AD plant to process a variety of feedstocks.</li> </ul>	<ul style="list-style-type: none"> <li>As per point 1 above</li> <li>Update to accurately reflect controls</li> </ul>	<ul style="list-style-type: none"> <li>Feedstock types updated to reflect Licence Holder's request</li> <li>This section specifically relates to non-confirming wastes posing a risk of increased odour emissions which is why a specified waste acceptance criteria has been included on the licence. The Licence Holder's request is not relevant to this section and has therefore not been actioned.</li> </ul>
65	<p><b>Section 7.1.2: feedstock volumes</b></p> <p>As per point 1 above as well as amending volume of digestate</p>	As per point 1 above as well as updating to reflect accurate data for water balance assessment	As per points 1 and 46 above
66	<p><b>Section 7.3.1: windrow management</b></p> <p>Update the sentence related to windrow dimensions to include the word 'not' which ensures that windrows must not exceed the dimensions listed in this section.</p>	Update error	Error corrected
67	<p><b>Section 7.3.2: Leachate pond management</b></p> <ul style="list-style-type: none"> <li>Update volume of digestate and green waste authorised to be blended in Composting Shed</li> <li>Update grounds to address there only being a potential for high risk and odour</li> <li>Update volumes of authorised digestate</li> </ul>	<ul style="list-style-type: none"> <li>Update to accurately reflect amount of digestate that can be processed</li> <li>Reflect that there is a only a potential high risk for odour</li> <li>Update to accurately reflect amount of digestate that can be processed</li> </ul>	<ul style="list-style-type: none"> <li>Volumes updated as per the Delegated Officer's calculations in section 4.3.55 of Decision Report.</li> <li>The ground refers to the outcome of the risk assessment which identified a high risk. Therefore, this request has not been actioned as it does not accurately reflect the Delegated Officer's findings for odour risk.</li> <li>Digestate volumes updated as per the</li> </ul>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			Delegated Officer's calculations.
68	<b>Section 7.3.4: Noise emissions management</b> The grinder and windrow tuner were identified as the dominant noise sources in the Licence Holder's acoustic assessment. The grounds in this section relate to not being able to operate the grinder and screener at the same time. Update section to remove reference to screener and relace with windrow tuner.	Update to address findings of acoustic assessment	Updated to reflect Licence Holder's request
69	<b>Section 7.4.1: Groundwater monitoring</b> Request to undertake groundwater monitoring on a biannual basis instead of the proposed quarterly schedule.	<ul style="list-style-type: none"> <li>Based on the technical assessments and recommendations by DWER technical experts with respect to bi-annual monitoring, Richgro requests that a review of analytes required for quarterly monitoring be undertaken.</li> <li>Richgro will sample for these required analytes on a quarterly basis, and requests that sampling of the broader suite of analytes be conducted on a bi-annual basis.</li> </ul>	Section updated to reflect that quarterly monitoring is only required for the first four sampling rounds and is reduced to bi-annual after this. This allows DWER to obtain an accurate data set to depict seasonal trends. The grounds section has been updated to reflect this.
70	<b>Section 8.2: Category 61A premises production or design capacity</b> Update overall storage capacity for premises based on the volume of manures, increase of solid waste into AD plant and requested green waste increase.	Update section to accurately address throughput	<p>Section updated to reflect the overall throughput capacity of 75,000 which incorporates the AD plant solid waste volumes, manures, and existing saw dust, pine bark and green waste volumes.</p> <p>As detailed above in point 1, an increase in green waste is outside the scope of the licence review and has therefore not been actioned.</p>
<b>Comments in regards to Commercial-in-Confidence: Licence</b>			
71	<b>Table 2: Monitoring and recording of inputs and outputs</b>	Commercial-in-Confidence	The Licence Holder can request at the time of submitting monitoring (or other) documentation

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
	<ul style="list-style-type: none"> <li>• Information on quantities of compost, mulch and blended soils dispatched in sales from site to be provided in-confidence to DWER given the high commercial sensitivity of the information.</li> <li>• Provision to be made in Table 2 or accompanying note to be stated to this effect.</li> </ul>		<p>that the information provided is exempt from publication. This is required to be addressed against the relevant provisions of the <i>Freedom of Information Act 1992</i> (FOI Act).</p> <p>As a result of the above, this condition has not been amended as requested.</p>
72	<p><b>Table 3: Infrastructure and equipment controls table</b></p> <ul style="list-style-type: none"> <li>• State loading bays for waste storage.</li> <li>• Remove dimensions and bio filter medium description for the biofilters.</li> <li>• Omit capacity for gas generators.</li> <li>• Omit dimensions for AD tanks, mixing tank, dosing tank and final tank.</li> <li>• Omit the brand of power generator</li> <li>• Omit the m<sup>3</sup>/hour capacity of grinders and screeners</li> </ul>	Commercial-in-Confidence	<ul style="list-style-type: none"> <li>• This section already includes details of waste loading bays. It is unclear what the Licence Holder's comment is requesting for this section. No changes have been made.</li> <li>• The dimensions and descriptions of infrastructure are included to only authorise the capacities and designs that have been assessed under this review which have been deemed to have an acceptable risk level. The dimensions and description of medium for the biofilters are specified in Environmental Assessment Report for works approval W5311/2012/1 which is in the public domain. Therefore this has remained in the licence.</li> <li>• As per the above comment, the capacity of the gas generators is crucial for determining the level of emissions anticipated from the facility, therefore this has remained on the licence.</li> <li>• The diameter specifications for the mixing tank, dosing tank, AD tanks and final tank are specified in Environmental Assessment Report for works approval W5311/2012/1 which is in the public domain. Therefore these specifications are not exempt from publication under the FOI Act and have remained in the</li> </ul>



Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			<p>licence. In addition, these specifications reflect what the Delegated Officer has assessed and considers to be acceptable as part of this licence review.</p> <ul style="list-style-type: none"> <li>• The brand of the power generator has been removed.</li> <li>• As per the above comments, these grinders and screeners have been assessed at their specified capacities which have been considered to pose an acceptable risk to the environment and public health. Specifying capacities of equipment/infrastructure limits operations to those assessed.</li> </ul>
73	<p><b>Schedule 2: general description</b> Omit supplier details for feedstock types received onsite – include a more general description of wastes.</p>	Commercial-in-Confidence	Updated to reflect Licence Holder's request
74	<p><b>Schedule 2: Outdoor composting</b> Remove the percentage of manure that is used for nutrient content in the composting process</p>	Commercial-in-Confidence	Updated to reflect Licence Holder's request
<b>Comments in regards to Commercial-in-Confidence: Works approval</b>			
75	<p><b>Section 2: Background</b> Remove reference to the capacity of the bagging station</p>	Commercial-in-Confidence	Updated to reflect Licence Holder's request
76	<p><b>Table 2: Infrastructure</b> Update as per comments made in point 72 above</p>	Commercial-in-Confidence	As per comments above for point 72
77	<p><b>Table 3: waste acceptance</b> As per point 73 above</p>	Commercial-in-Confidence	Updated to reflect Licence Holder's request

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
78	<b>Section 3.2.2: outdoor composting</b> As per point 74 above	Commercial-in-Confidence	Updated to reflect Licence Holder's request
79	<b>Table 13: Proponent's controls for odour</b> As per point 72 above, remove specifications of the biofilter	Commercial-in-Confidence	As per comments for point 72
<b>The following comments have been provided in regards to the second draft being sent out for comment.</b>			
80	<b>Condition 3(e)</b> Request to store packaged food and beverage wastes onsite.	Packaged wastes are received and stored in the receival hall and do not generate odour.	Condition 3(b), which authorises the acceptance of solid food wastes, has been updated to reflect that liquid food wastes are also authorised, which was excluded as an oversight. The conditions in this section do not limit the form wastes are received in regards to packaging. As a result, condition 3(e) does not require updating as these conditions already authorise packaged and non-packaged wastes to be received.
81	<b>Condition 4 (and Table 2): monitoring of inputs and outputs.</b> Remove requirement to monitor outputs of blended soil products, compost products and mulch products.	<ul style="list-style-type: none"> <li>• Tonnages of products vary in seasonal conditions and depending on moisture content when packaged.</li> <li>• Mixes may be partly combined between both the Jandakot and Amazon sites.</li> <li>• Internal recording is in litres and cubic metres.</li> <li>• The previous licence only required outputs to be recorded.</li> </ul>	<p>As described in Point 3 above, Condition 5 has been included on the licence to request a summary of the annual inputs and outputs to determine compliance with the annual amounts specified in the licence.</p> <p>The recording of each input and output assists in determining compliance against the conditions of the licence (i.e. feedstock controls) and throughput authorised on the licence, which specifies the amount of compost and blended soils produced. It is acknowledged that tonnages vary due to moisture contents however prescribed premises categories are specified in tonnes as described in Schedule 1 of the EP Regulations and the licence mirrors this.</p> <p>Additionally, the requirement to record each load</p>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			entering and leaving the premises assists in determining environmental compliance in the event that complaints are received due to an odorous or dusty load and/or source.
82	<p><b>Condition 6 (and Table 3): Infrastructure and equipment</b></p> <ul style="list-style-type: none"> <li>• Points 11 and 20 – biofilter <ul style="list-style-type: none"> <li>○ Remove reference to type of bio-medium used;</li> <li>○ Remove dimensions of biofilter and stack.</li> </ul> </li> <li>• Points 12, 13, 14 and 15 – tanks <ul style="list-style-type: none"> <li>○ Omit tank dimensions</li> <li>○ Omit gas capacity.</li> </ul> </li> <li>• Point 27 – bagging station <ul style="list-style-type: none"> <li>○ Change wording from air extraction unit to dust extraction unit.</li> </ul> </li> <li>• Points 28 and 29 – grinders and screeners <ul style="list-style-type: none"> <li>○ Omit m3/hour capacity</li> </ul> </li> </ul> <p>Reword to include description that this infrastructure is diesel powered.</p>	<ul style="list-style-type: none"> <li>• Commercial-in-confidence as well as noting that as technology changes, the design of site infrastructure may change.</li> <li>• As above</li> <li>• Update to include the correct infrastructure detail</li> <li>• Commercial-in-confidence as well as noting that as technology changes, the design of site infrastructure may change.</li> </ul>	<ul style="list-style-type: none"> <li>• As per the comments for Point 72 above, these requests have not been actioned. It is also noted that changes to site infrastructure may meet the elements of section 53 of the EP Act and may require assessment by the Department prior to changes being made. It is recommended that the Licence Holder contact DWER prior to the installation or modification of site infrastructure related to the prescribed activities. In the event that DWER does assess such changes, the wording in the licence may be amended.</li> <li>• As above</li> <li>• Updated as per Licence Holder's request in both licence and Decision Report documents.</li> <li>• As per the comments for Point 72 above and first point in this section, the capacity has not been removed however the Delegated Officer has updated description to reflect that they are fuelled by diesel.</li> </ul>
	<p><b>Condition 7: noise emissions</b> Remove this requirement</p>	Acoustic assessment demonstrates that the site can meet compliance with the EP Noise Regulations when the shredder is operating at the proposed new location at the same time the windrow turner is in operation.	The Delegated Officer has reconsidered the Acoustic Assessment and in consultation with DWER's Noise Regulation branch, agrees that noise emissions from the grinder and windrow turner should meet the EP Noise Regulations when the grinder is operating from location B (as required by condition 8) and not operating

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			<p>between 7pm and 7am (required by condition 9).</p> <p>This requirement has been removed. All conditions following from this condition have been renumbered in the licence however they have not been renumbered in this comment section.</p>
83	<p><b>Condition 16(e): outdoor windrow dimensions</b>  Reword this requirement to state "windrows to be constructed to facilitate aeration, growth and multiplication of micro-organisms in the composting process."</p>	<ul style="list-style-type: none"> <li>• Composting is not impacted by length of windrows.</li> <li>• Width of windows is determined by equipment used onsite (i.e. turner which is 6m).</li> <li>• Any new equipment may result in changes to windrow dimensions.</li> </ul>	<p>As per comments in Point 12 above, this condition has been retained on the licence to address fire risk. Noting the Licence Holder's comments regarding width of windrow turner, the width of the windrow has been amended to 6m.</p>
84	<p><b>Condition 16(g): outdoor compost meeting AS 4454</b>  Remove requirement to have compost meet AS 4454 and reword to refer to Quality Management System (QMS) and Standard Operating Procedures (SOPs).</p>	<ul style="list-style-type: none"> <li>• AS 4454 is not a regulatory tool and is a voluntary standard.</li> <li>• There is no legal requirement to comply with AS 4454.</li> </ul>	<p>Under section 62 of the EP Act, a licence may include conditions which are considered <i>necessary or convenient for the purposes of this Act relating to the prevention, control, abatement or mitigation of pollution or environmental harm.</i></p> <p>The Delegated Officer considers that composting to AS 4454 ensures a degree of control over the end use of the product to assist in limiting impacts to the end user and/or receptor.</p> <p>As per comments in Points 12 and 15 above, this requirement has not been removed.</p>
85	<p><b>Condition 17(b): maintaining indoor compost temperature</b>  "Compost processed in accordance with QMS and SOPs, temperature testing confirms compost batch has achieved a consistent temperature between 55° and 65° over a period of 15 days."</p>	<ul style="list-style-type: none"> <li>• Products are undertaken in accordance with QMS and SOPs.</li> <li>• Temperature testing varies on the phase that is being undertaken during the composting process.</li> </ul> <p>Temperatures will vary during consecutive</p>	<p>Condition 17(b) requires the core temperature of the composting pile to be maintained over a period of 15 days. This is considered part of the pasteurisation process and the requirements have been specified to mirror to requirements of AS 4454 for pasteurising high risk feedstocks, which the Delegated Officer consider digestate to be.</p>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
		days depending on the process being undertaken.	Monitoring of temperature each day, as required by condition 19, assist in determining compliance with this requirement. This condition has not been updated.
86	<p><b>Condition 17(e): indoor blending of digestate with green waste</b> Remove this requirement and replace with requirement to blend digestate with greenwaste in a covered mixing tank.</p>	Update this condition to reflect the proposed mixing operations.	<p>The Delegated Officer has considered the Licence Holder's process to blend digestate with green waste in an outdoor vessel. The Delegated Officer considers that the blending within the vessel is sufficient to combine the materials. The Delegated Officer notes that the vessel and conveyors between the vessel and composting shed are covered.</p> <p>Part (e) of this condition has been amended to allow blending to be undertaken within an enclosed vessel and transported to the composting shed via an enclosed conveyor system.</p> <p>A new part (f) of this condition has been included to specify that the green waste blended with digestate may only be moved into the composting shed when the biofilters are operational.</p>
87	<p><b>Condition 17(f): batch limits</b> It is unclear what change is proposed to this condition and the Delegated Officer has understood that only clarification is sought about why it was included onto the Licence.</p>	Compost batches are to be constructed in half bays which may result in batch construction occurring over a few days based on the available green waste.	Batch limits have been included on the licence to specify the maximum amount of digestate that may be applied to green waste. This correlates with the value calculated in section 4.3.5.5 of the Decision Report and assists in reducing impacts from emissions of leachate and odour.
88	<p><b>Condition 18(b): Solvita scale</b> Change requirement of compost achieving 5 on the Solvita scale to 3</p>	1.5 to 3.0 on the Solvita scale is considered as the "highly active composting phase". 3.0 to 4.5 on the Solvita scale represents the "active composting phase" and 4.5 or above	It is unclear what the Licence Holder's rationale is in regards to this matter. The Delegated Officer has assumed that the Licence Holder only intends to undertake pasteurisation within the composting shed and wishes to undertake the 'active

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		<p>is considered the "curing phase".</p> <p>As per DWER licence requirements, the compost mix will be pasteurised inside the shed for a minimum of four weeks which would include the pasteurisation and active composting phases to occur.</p>	<p>composting phase' outdoors.</p> <p>Due to the risk posed by odour and in regards to stability compost as discussed in Point 89 below, the Delegated Officer has determined that compost must only be removed outdoors when it meets the specifications of condition 18. Changing the requirement to a value of 3, as requested by the Licence Holder, may generate significant odours as biological activity is still being undertaken. Given that a value of 4.5 on the Solvita scale represents the curing phase, when odours are unlikely to be significant, the Delegated Officer has amended the requirement from 5 to 4.5</p>
89	<p><b>18(c): requirements after pasteurisation</b> Change the current requirements for indoor compost following pasteurisation and replace with "Compost processed in accordance with QMS and SOPs."</p>	<p>Seeking clarification on why moisture content and carbon dioxide are required to be monitored once pasteurisation has been achieved as worldwide industry is to only test for temperature.</p>	<p>The Delegated Officer reviewed the SOP for manufacturing procedures (SOP3A.03), provided by the Licence Holder in November 2017, and determined that it was insufficient in clarifying and identifying when compost stability was achieved, and how the procedures proposed were able to mitigate the risk of odour when the digestate blended green waste was moved outside of the composting shed.</p> <p>The SOP was unclear and did not propose any clear and measurable methods for determining when compost stability had been reached.</p> <p>In connection with DWER's Odour Expert, the Delegated Officer determined that compost stability was achieved when temperature, moisture content, oxygen and carbon dioxide values were constant for a period of at least four days, which demonstrates that biological activity has stabilised and the maturation phase had</p>

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			<p>commenced. Once the higher biological activity has slowed down, the Delegated Officer considers that odour emissions from the storage of the compost outdoors will be significantly reduced when compared to compost that is still undergoing biological activity.</p> <p>As briefly discussed in Point 14 above, the requirement to constantly monitor temperature, moisture content, oxygen and carbon dioxide allows the Licence Holder and Delegated Officer to confirm in measurable ways, when compost stability has been achieved.</p> <p>The Licence Holder may apply to amend this requirement by offering a sound and measurable alternative method to determine when compost stability has been reached, which will be assessed by DWER.</p>
90	<p><b>Condition 19: monitoring and maintaining compost records</b> Revise condition to state "the Licence Holder must maintain records of monitored results for each compost batch".</p>	<p>"Monitoring of compost batches will vary depending on the phase of the compost batch. Records of monitoring measurements are recorded in accordance with QMD and SOPs."</p>	<p>This requirement is essential in determining when compost stability has been achieved and is required to meet compliance with conditions 17 and 18. Therefore, this condition has not been modified.</p>
91	<p><b>Condition 37 (and Table 11): infrastructure construction requirements</b> Remove requirement to construct MB11</p>	<p>MB11 is an existing bore</p>	<p>Updated as per Licence Holder's request</p>
92	<p><b>Definition of Digestate</b> Change definition to "the untreated/unprocessed liquid waste produced from the biodegradation of feedstock within an Anaerobic Digestion plant."</p>	<p>Update to reflect that digestate is untreated</p>	<p>This definition has been updated to reflect the Licence Holder's request however it should be noted that the acceptance and processing of any treated liquid from the AD plant is not authorised under this licence and will require assessment by DWER.</p>

Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
93	<p><b>Schedule 2: Outdoor composting (point 7)</b> Amend to read: "after pasteurisation, the compost undergoes the maturation stage. During the composting stage, windrows are turned once or twice weekly, as required, by a windrow turner to promote aeration and assist in applying water (bore or treated leachate and stormwater from leachate ponds) into the windrows for moisture content."</p>	<ul style="list-style-type: none"> <li>• Update to describe what is undertaken onsite.</li> <li>• The maturation stage does not require regular turning.</li> </ul>	<p>The Delegated Officer considers that there is no specified 'composting stage' as the whole process is considered to be composting with the main distinctive stages being the initial wetting and mixing, pasteurisation and then maturation. The overall composting process is detailed in this section. This sentence specifically relates to the maturation phase and to change it as per the Licence Holder's request, the sentence would lose its context.</p> <p>The Delegated Officer has amended this condition to remove reference to the windrows being turned 'once or twice daily' and refer to them being turned as required which is considered to be consistent with the Licence Holder's intent.</p>
94	<p><b>Schedule 2: Indoor composting (Point 3)</b> Amend this section to state that 3.5 bays, instead of 3, will be available at any one time to provide sufficient space for turning compost.</p>	Update to reflect the operations that are proposed.	<p>This information is contrary to advice provided by the Licence Holder in November 2017 which specified that one full bay would remain empty to allow for the rotating aerated compost mix. The new proposed change has implications on the amount of green waste and digestate calculated for the whole Premises which has already been assessed twice as part of this review. The Delegated Officer considers that this is outside the scope that has been assessed and it has not been considered as part of this review. The Licence Holder may apply to amend this requirement which will be considered by DWER.</p>
The following matter was raised outside of the second comment period			
95	<p><b>Condition 37 (and Table 12): Biofilter requirements</b> Remove this requirement</p>	The requirements specified in this table have been completed.	The Delegated Officer has considered the report provided however not all of the requirements specified in this condition have been completed.



Ref. No	Comments received	Licence Holder rationale	DWER consideration of comment:
			<p>such as specifying if there are any tears/gaps, fungi/mould or pooling water present in the biofilters. It is also identified that the Licence Holder has not inoculated/seeded the biofilters which are a requirement of this condition and must be undertake prior to digestate being processed in the composting shed. As the documentation provided is insufficient, these requirements remain on the licence.</p>