



Licence Number L8336/2009/2

Licence Holder 002 902 650

ACN L8336/2009/2

File Number: DER2015/001723

Premises Mindarie Resource Recovery Facility
Lot 801 on Plan 57533 Pederick Road
NEERABUP WA 6031

Date of Report 15/09/2020

Decision / Proposed Decision Grant

1. Definitions and interpretation

Definitions

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

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Amendment Report	refers to this document
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the <i>Environmental Protection Act 1986</i> Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
EP Act	<i>Environmental Protection Act 1986</i> (WA)
EP Regulations	<i>Environmental Protection Regulations 1987</i> (WA)
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
Licence Holder	Suez Recycling and Recovery Pty Ltd
Minister	the Minister responsible for the EP Act and associated regulations
Prescribed Premises	has the same meaning given to that term under the EP Act.

Term	Definition
Premises	refers to the premises to which this Amendment Report applies, as specified at the front of this Amendment Report.
Revised Licence	the amended Licence issued under Part V, Division 3 of the EP Act, with changes that correspond to the assessment outlined in this Amendment Report.
Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>

2. Amendment Description

The following guidance statements have informed the assessment and decision outlined in this Amendment Report:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Decision Making (June 2019)*
- *Guidance Statement: Risk Assessment (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

2.1. Purpose and scope of assessment

The Mindarie Resource Recovery Facility (MRRF) accepts municipal waste from the constituent members of the Mindarie Regional Council. The waste is separated, and the compostable organic material is processed to produce a stabilised compost product. Non-organic material is further separated into recyclable waste and any residual waste is disposed of at the Tamala Park Landfill.

On 14 June 2019 a compliance inspection of the MRRF was undertaken by Department of Water and Environmental Regulation (DWER) Officers and it was identified that the Premises was operating outside of its Licence conditions. On 3 February 2020 the Licence Holder submitted an application, at DWER's request, requesting amendments to Conditions 18, 21 and 22 to address the identified non-compliances. Conditions 18, 21 and 22 relate to biofilter performance.

2.2. Biofilter

The MRRF is an indoor waste processing facility which is intended to be maintained under negative pressure so that all air extracted from the processing areas undergoes the humidification process and air treatment through a four cell biofilter. With the three infeed fans, air is evenly distributed through the system at a maximum flow rate of 300,00m³/h to achieve maximum odour reduction efficiency. The odour control system design has been maintained since the commencement of the facility, with the most recent biofilter media refurbishment completed in April 2017.

By means of aerobic digestion, the biofilter removes ammonia, sulphurous and volatile organic odourant compounds. The primary effect of normal biofilter operation is a conversion of odour, from an intense sweet fermentation odour to a less intense, earthy-musty odour.

2.3. Proposed amendments to conditions

A summary of the proposed amendments is provided in Table 2 below. Rationale for the proposed amendments is provided under the conditions headings below Table 2.

Table 2: Summary of Licence Holder proposed amendments

Condition number of Existing Licence	Condition number of Revised Licence	Proposed amendment
18	19	Remove the requirement to continuously monitor relative humidity in the maturation hall

Condition number of Existing Licence	Condition number of Revised Licence	Proposed amendment
18	19	Reduce the frequency of the requirement to monitor pressure at the mixing chamber of the biofilter and the rear of each cell to monthly.
21 and 22	22 and 23	Three adjustments to continuous monitoring requirements of Relative Humidity in the three inlet ducts.
21	22	Remove the requirement to conduct bi-annual monitoring at the inlet of each biofilter cell.

Condition 18 of Existing Licence – Requirement to continuously monitor relative humidity

Relative humidity (RH) in the maturation building is monitored through a Supervisory Control and Data Acquisition (SCADA) system, however due to the high ambient humidity the in-situ probe has always measured 100 per cent. To validate this data the Licence Holder took manual measurements for two weeks using a handheld RH probe. These measurements confirmed that the ambient condition in the maturation area is highly saturated.

Condition 18 of Existing Licence – Requirement to monitor pressure at the mixing chamber of the biofilter twice weekly

Monitoring of biofilter back pressure intends to characterise the rate of increase of air flow resistance cause by biofilter media degradation. The Licence Holder has advised that based upon previous monitoring records, there is no significant increase in the maximum monitoring variance when comparing twice weekly sampling to monthly sampling. Therefore, the Licence Holder has proposed a monthly monitoring frequency.

Conditions 21 and 22 of Existing Licence – Adjustments to continuous monitoring requirements of relative humidity in the three inlet ducts

The Licence Holder proposed to amend the conditions in three areas:

- Reduce the RH limit from 85 per cent to 75 per cent to account for short term fluctuations in RH reading caused by humidification system cycles;
- Measure RH limit as the arithmetic average of the three inlet duct RH readings rather than individually; and
- Amend condition 22 to remove the requirement to investigate a continuous 24 hour exceedance, whilst retaining the 33 hour in 7 day exceedance investigation trigger.

The SCADA data provided in the 2018 annual report identified that continuous monitoring of RH at the inlet of the three fans was below the 85 per cent limit. The Licence Holder advised DWER officers that the exceedances of RH were 1 and 2 per cent below the RH limit of the Licence and this exceedance did not present any environmental impact as the humidifier is activated when RH reaches 85 per cent and only takes a number of minutes to increase RH. This process results in fluctuations in RH data in the 75-100 per cent range, with a long term average RH above 85 per cent.

Similarly, observations from continuous monitoring data include instances where the rapid fluctuations can cause on the RH readings from one inlet duct to read below 85 per cent, whilst the other two read well above the 85 per cent limit.

Conditions 21 Existing Licence – Remove the requirement to conduct bi-annual monitoring at the inlet of each biofilter cell

In September 2019 the Licence Holder advised DWER Compliance Officers that monitoring RH at the inlet of each biofilter cell was not possible, due to the velocity of air damaging probes.

3. Amendment history

Table 3 provides the amendment history for L8336/2009/2.

Table 3: Licence amendments

Instrument	Issued	Amendment
L8336/2009/2	22/11/2016	Amendment Notice 1 – adjustment of condition numbers
L8336/2009/2	03/08/2017	Amendment Notice 2 – review and amendment of odour controls
L8336/2009/2	15/03/2019	Amendment Notice 3 – to extend the expiry date for one year
L8336/2009/2	26/03/2020	Licence Amendment – Amalgamation of Amendment Notices and extension to the expiry date by one year
L8336/2009/2	15/09/2020	Licence Amendment to alter conditions 18, 20 and 21

4. Emission sources, pathways and receptors

4.1 Emissions

The potential for emissions to impact on sensitive receptors has been assessed in accordance with the Department's Guidance Statement: Risk Assessments. The key emission considered in the scope of this proposed amendment is odour. Specifically, odour that might arise from the proposed amendments to condition of the Licence.

4.2 Pathways

As odour is considered a potential emission, the prevailing wind direction has been considered. Using information available on the Bureau of Meteorology's website, the prevailing wind direction at the Gingin Aero weather station (29km from Mindarie) is predominately in an easterly direction in the morning (17km/h) and south westerly in the afternoon (21.6km/h).

4.3 Receptors

Table 4 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 4: Receptors and distance from activity boundary

Human Receptors	Distance from Prescribed Premises
Residential property	Approximately 900m south of the prescribed premises.
Wanneroo Gold Course	Approximately 450m east of the prescribed premises.

Table 5 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 5: Receptors and distance from activity boundary

Environmental Receptors	Distance from Prescribed Premises
Threatened Ecological Community - Banksia Dominated Woodlands of the Swan Coastal Plan IBRA Region	Located within the south eastern portion of the Prescribed Premises and adjacent to the eastern boundary
DBCA Managed Lands - Gnangara – Moore River State Forest	1km east of the Prescribed Premises
Bush Forever Site 295	Adjacent to eastern portion of the Prescribed Premises

It is noted that environmental receptors are not considered to be sensitive in relation to potential odour emissions.

5. Operational Data

On 4 and 5 February 2020 DWER's Pollution Hotline received a number of odour complaints. On 6 February DWER's Pollution Response Officers attended the Premises to ascertain the source of odour. Observations that were made during the site inspection indicated that the source of the odour emissions was the biofilter area. It was noted by officers that there was evidence of defects in the infrastructure and that the operational staff were unfamiliar with the biofilter alarm triggers and responses.

DWER's Air Quality Branch reviewed the data provided by the Licence Holder and provided the following information to inform the assumptions made in the risk assessment in relation to odour emissions and the Applicant controls.

- RH is currently measured at both the extraction point from the maturation hall and at the inlet of the biofilter which are two points close together within the air conveyance infrastructure.
- Based on the trends shown in the monitoring data provided, it was observed that less frequent data would show enough information to detect biofilter media degradation it may not be sufficient to detect short-duration maintenance issues.
- The biofilter infrastructure used at MRRF can operate under varying RH; however, the biofilter media is likely to be less effective when RH drops very low, or below 85% for a longer period of time (e.g. > 3 hours).
- Based on DWER's understanding of infrastructure operation and odour emission observations during maintenance and unplanned shutdowns, applicant controls to minimise emissions of odour should address both longer-term maintenance and operational outcomes and contingencies for short-term, unplanned events that lead to unintended odour emissions.

6. Risk assessment

Table 6 below describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 6: Risk assessment for proposed amendments during operation

Risk Event				Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Regulatory controls
Source/Activities*	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
Putrescible organic waste sorting and processing	Odour	<p>Receptors: Nearest residential receptor located approximately 900m south. Wanneroo Golf Club located approximately 450m east.</p> <p>Pathway: Air / wind dispersion</p> <p>Impact: Impacts to amenity and wellbeing</p>	<p>Biofiltration and air conveyance infrastructure.</p> <p>Continuous monitoring of relative humidity and temperature, with amended monitoring and reporting requirements associated with the operation of the biofilter detailed in section 2.3.</p>	Moderate	Possible	Medium	Due to the highly odourous nature of the composting process there is potential for medium level impacts to amenity. While the applicant has implemented a number of odour control measures, impacts to amenity still occur on occasion. Additional regulatory controls are imposed on the Licence to minimise this risk. Additional controls are Condition 2 (maintenance of infrastructure) and Condition 23 (Biofilter Management Plan).	Subject to compliance with Conditions 1, 2, 3, 5, 6, 8, 11, 12, 13, 15, 18, 19, 20, 21, 22 and 23.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

7. Additional Regulatory Controls imposed on Licence

The proposed amendments to conditions have been reviewed with regard to the practicality of monitoring of the biofilter infrastructure, the effectiveness of current odour controls, and the identified factors contributing to the recent odour emissions related to maintenance of the biofilter.

To ensure that the odour management infrastructure at the Premises is maintained in good working order Condition 2 (Table 1) has been added to the Revised Licence. This condition will hold the Licence Holder accountable for maintaining infrastructure.

During the course of the February investigation it was identified that the Licence Holder was using a national and minimal standard operating procedure and an Environmental Compliance Work Instruction rather than a comprehensive site-specific management plan to manage biofilter operation. DWER is of the opinion that that the development of a site specific biofilter management plan will be able to address the maintenance issues which were identified as the cause of the February odour event. The biofilter management plan should include, but not be limited to:

- Details of the design and operation of the biofilter;
- Monitoring and recording (including RH being continuously monitored individually at Zones 1, 2, and 3 and an internal alarm sounding when RH at one of three zones drops below 85% for three hours);
- Triggers and alarms;
- Refurbishment plan;
- Contingencies in place to address upset (i.e. Extreme heat) or maintenance conditions; and
- Investigations and responses

8. Consultation

Table 7: Summary of consultation

Method	Comments received	DWER response
Local Government Authority advised of application (20/03/2020)	No comments received	n/a
Applicant referred draft documents (28/07/2020)	Comments received on 18/08/2020. Refer to Appendix 2 for a summary of Licence Holder comments	Refer to Appendix 2

9. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a licence amendment will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

Tracey Hassell
A/Manager, Waste Industries

An officer delegated by the CEO under section 20 of the EP Act

Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L8336/2009/2	L8336/2009/2	accessed at www.dwer.wa.gov.au
2	Application form and supporting documentation	n/a	DWER records (DWERDT249632)
3	Advice received from Air Quality Branch, DWER	n/a	DWER records (A1892136)
4	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
5	DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.	DER 2015b	
6	DER, November 2016. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	DER 2016b	
7	DWER, June 2019. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	DWER 2019	

Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Report on 28/07/2020 for review and comment. The Licence Holder responded on 18/08/2020. The following comments were received on the draft Amendment Report.

Condition	Summary of Licence Holder comments provided on 18/08/2020	DWER response and summary of meeting items discussed on 01/09/2020
2, Table 1	The Licence Holder provided missing information from Table 1	This information was incorporated into Table 1
18	The Licence Holder advised that the requirement to record back pressure fortnightly appears to have been applied arbitrarily.	<p>Further to a meeting held between the Licence Holder and DWER on 1/09/2020, DWER understands that back pressure is only recorded to monitor biofilter media degradation and that other maintenance issues such as fan blockages will be picked up through continuous monitoring of fan speeds and air flow. This is to be incorporated into the Biofilter Management Plan.</p> <p>DWER agrees to amend the recording frequency of pressure to monthly as this will be sufficient to detect biofilter media degradation.</p>
21	The Licence Holder advised that it appears that the three requested amendments appear to have been misinterpreted in relation to RH limits and exceedance triggers.	<p>In the meeting of 1/09/2020 DWER explained to the Licence Holder that the limits (75% as a hard limit and 85% for periods exceeding 3 hours) were chosen based on published guidance and on advice from air quality experts. DWER and the Licence Holder agreed on 75% as a reportable limit, however the Licence Holder requested to change the limits in Column 3 of Table 4 so that notification is only required when RH falls below 75% per for in excess of three hours. DWER has reviewed SCADA data for February 2020 and is of the opinion that the stated limits are appropriate and will not trigger frequent exceedances/notifications.</p> <p>The Licence Holder explained that RH and temperature are actually measured at the outlet of the three fans rather than the inlet. To justify why an arithmetic value of RH at the outlet of the</p>

Condition	Summary of Licence Holder comments provided on 18/08/2020	DWER response and summary of meeting items discussed on 01/09/2020
		<p>three fans is sufficient the Licence Holder advised that the air is mixed in the ducting before it is fed into the plenum (base of the biofilter) and therefore RH of air reaching the biofilter averages >85%. The system at this facility is an older style and therefore measurements are not taken in the same way as they would be in a more contemporary system.</p> <p>DWER agreed to amend condition 21 to reflect that RH can be measured as an arithmetic value of the three fan readings. But noted that individual fan readings will need to be monitored individually in operation of the system, with monitoring details contingency actions provided in the Biofilter Management Plan</p>