



Licence Number	L7064/1997/11
Licence Holder	City of Rockingham
ACN	NA
File Number:	2010/005913-2
Premises	Millar Road Landfill Facility Millar Road, BALDIVIS WA 6176 Lot 2170 on Plan 211650
Date of Amendment	20 March 2019

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* (EP Act) as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

**STEVE CHECKER
MANAGER WASTE INDUSTRIES
REGULATORY SERVICES**

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

Definitions and interpretation

Definitions

In this Amendment Notice, 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 Notice	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 WA 6919 info@dwer.wa.gov.au
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
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 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
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	City of Rockingham
m ³	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	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.
Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>
Special Waste Type 3	has the meaning defined in Landfill Waste Definitions
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the existing Licence L7064/1997/11 issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B (9) of the EP Act.

This notice is limited only to an amendment for Category 64 in relation to the proposed acceptance, handling and landfilling (disposal) of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) contaminated solid wastes TO ITS Class III waste disposal facility. No changes to the aspects of the Existing Licence relating to Category 62 have been requested by the Licensee.

The following guidance statements have informed the decision made on this amendment:

- *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 Assessment (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

Amendment description

The Millar Road Landfill is a Class III Facility (MRLF) is licenced to accept 450,000 tonnes of waste per annum.

The most recent landfill cells are lined with a composite liner consisting of 2.0 mm high density polyethylene (HDPE) and a layer of geosynthetic clay liner (GCL). The new cells are designed to have minimum permeability of 1×10^{-9} m/s. The new cells have a leachate collection system and lined leachate ponds with a composite liner system the same as the new landfill cells, consisting of 2.0 mm HDPE and a GCL layer.

On the 13 November 2018 the City of Rockingham (The City) submitted an Application to amend the Existing Licence seeking Part V approval for the acceptance, handling and landfilling (disposal) of PFAS contaminated wastes within existing Class III landfill cells on the Premises.

Refer to Figure 1 below for the Site Plan depicting the groundwater monitoring bores, Class III landfill cells 16 and 17.

The Licensee is not proposing any changes to the design or throughput capacity of the existing landfill cells which are proposed to be used.

The City has also requested that the testing of PFHxS, PFOS and PFOA be included in the amended license (L7064/1997/11).

Background on the management of PFAS contaminated solid wastes

PFAS are a family of manufactured chemicals which do not occur naturally in the environment. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are two of the most well-known PFAS and are contaminants of emerging concern in Australia and internationally. PFOS and PFOA are known to be persistent, bio-accumulative and toxic and, due to their persistence in the environment and moderate solubility, can be transported long distances in water and air, and transfer between different media (for example soil, sediment, surface water and groundwater). They have been identified in the environment at a number of known and

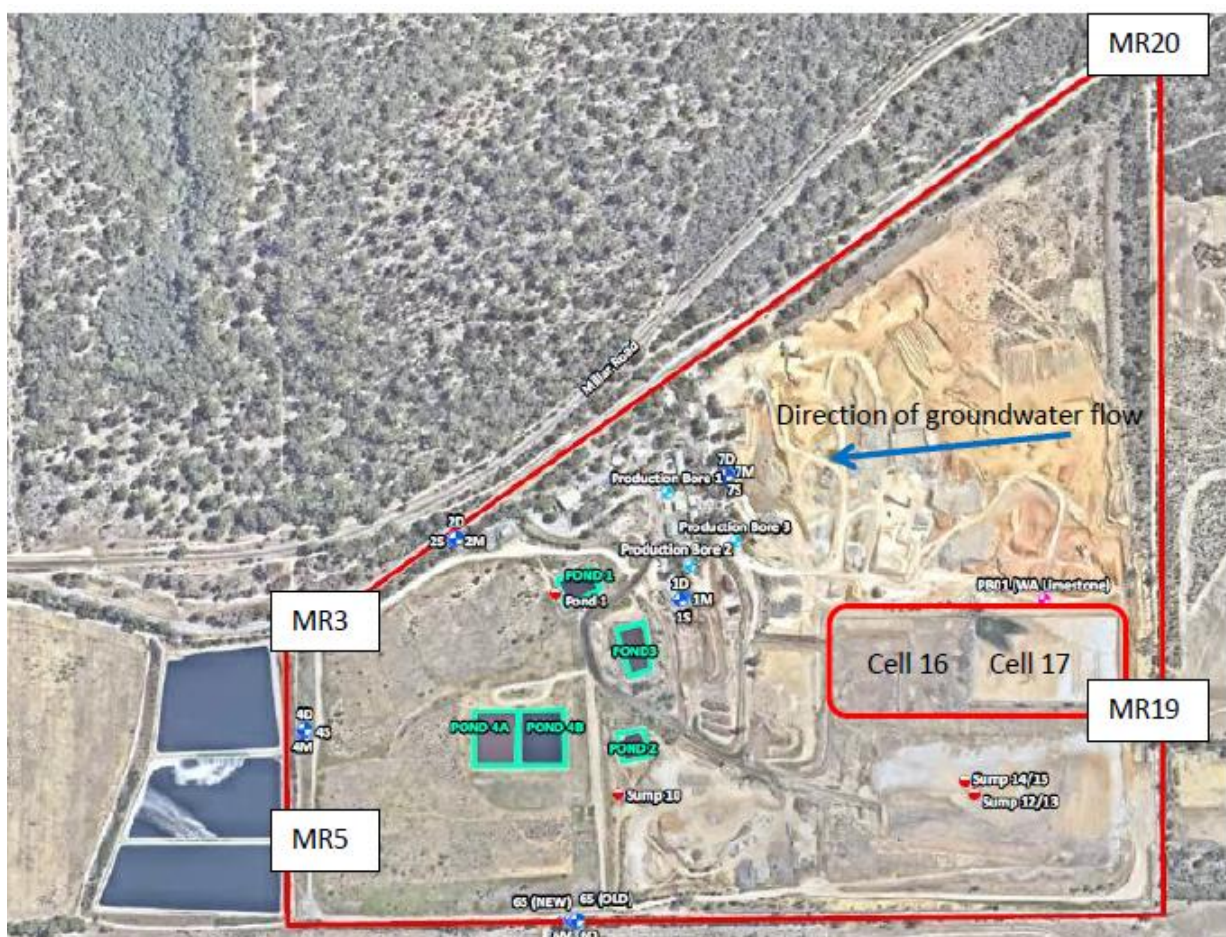
suspected contaminated sites in Western Australia (DER, January 2017c).

In accordance with the DWER *Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)* (DER, January 2017c), Landfill operators licensed under Part V of the EP Act intending to accept PFAS contaminated waste must apply to DWER for an amendment to their licence to allow this waste to be accepted/disposed.

Interim leachable concentration (ASLP) and concentration limit (CL) values for the classification of PFAS contaminated solid wastes are specified in the aforementioned DWER *Interim PFAS Guideline* (DER, January 2017c) as is criteria relating to the siting of the landfill; the guideline states that landfills accepting PFAS containing wastes must not be located:

- on very high or high vulnerability aquifers;
- within 1000m of a surface water body that supports an aquatic environment (including groundwater dependent ecosystems); or
- within 1000m of a surface water drain that is connected to groundwater and/or discharges directly into an aquatic environment (including groundwater dependent ecosystems) or a water body that supports fish species that may be caught and consumed.

Figure 1: Groundwater monitoring bores and Class III landfill cells 16 and 17



Compliance history

In 2016 DWER's contaminated sites team in a letter advised the City of receiving information that a company had disposed of waste containing Aqueous Film Forming Foams (AFFF's) as class III waste to the MRLF. Based upon the information DWER requested that the City introduce an expanded set of analytes to its groundwater monitoring. The results of the analytes, Perfluorohexane Sulfonate Acid (PFHxS), Perfluorooctane Sulfonate Acid (PFOS) and Perfluorooctanoic Acid (PFOA) are provided below. The application details that monitoring bores MR3 and MR5 are down gradient of the landfill. Monitoring bores MR19 and MR20 are up gradient for the landfill and can be considered baseline data.

Table 2: Groundwater monitoring bore MR3M

Date of Sampling	Perfluorohexane sulfonate acid (PFHxS)	Perfluorooctane sulfonate acid (PFOS)	Perfluorooctanoic acid (PFOA)
	µg/L		
20.09.2016	0.07	<0.01	<0.01
07.09.2017	<0.02	<0.01	0.02
Table 4 Drinking Water ¹	0.5	0.5	5.0
Table 1 Drinking Water ²	0.07	0.07	0.56

Table 3: Groundwater monitoring bore MR5M

Date of Sampling	Perfluorohexane sulfonate acid (PFHxS)	Perfluorooctane sulfonate acid (PFOS)	Perfluorooctanoic acid (PFOA)
	µg/L		
20.09.2016	0.02	<0.01	<0.01
06.09.2017	0.03	<0.01	0.02
Table 4 Drinking Water	0.5	0.5	5.0
Table 1 Drinking Water	0.07	0.07	0.56

Table 4: Groundwater monitoring bore MR19

Date of Sampling	Perfluorohexane sulfonate acid (PFHxS)	Perfluorooctane sulfonate acid (PFOS)	Perfluorooctanoic acid (PFOA)
	µg/L		
19.09.2016	<0.02	<0.01	<0.01
05.09.2017	<0.02	<0.01	<0.01
Table 4 Drinking Water	0.5	0.5	5.0
Table 1 Drinking Water	0.07	0.07	0.56

Table 5: Groundwater monitoring bore MR20

Date of Sampling	Perfluorohexane sulfonate acid (PFHxS)	Perfluorooctane sulfonate acid (PFOS)	Perfluorooctanoic acid (PFOA)
	µg/L	µg/L	µg/L
19.09.2016	<0.02	<0.01	<0.01
06.09.2017	<0.02	<0.01	<0.01
Table 4 Drinking Water	0.5	0.5	5.0
Table 1 Drinking Water	0.07	0.07	0.56

1: Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS), January 2017, DWER. Table 4

2: PFAS National Environmental Management Plan, January 2018, Government of Western Australia

The monitoring undertaken indicates that there is very minor presence of PFAS chemicals in the down gradient bores MR3 and MR5.

Proposed waste acceptance, handling and disposal

The following information has been summarized from the application:

Customer enquiry

Upon receiving a request in the form of a written Contaminated Waste Application to receive PFAS contaminated waste the Facility staff will review the test results from a NATA registered soil testing laboratory with sufficient sample numbers in accordance, with the Landfill Waste Classification and *Waste Definitions 1996 (as amended 2018)*, to determine if the waste material complies with the concentration limits detailed in the *Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)*, January 2017, DWER, Table 6. These levels are shown in Table 5.

The client's *Contaminated Waste Application* includes questions regarding the source of the material, the origin of the contamination and the quantity of waste to be disposed. If the material complies with the acceptance criteria an *Approval Number* and letter will be issued to the client. Using the *Approval Number* the PFAS contaminated material will be booked in for delivery. Using the *Approval Number* the source and quality of the PFAS contaminated material can be tracked. If the material does not comply the client will be required to treat the waste material and resubmit the application or source a higher level disposal location.

Delivery of waste

At the pre-determined delivery time the client will deliver the PFAS contaminated waste to the Facility. The approval process and the records held at the weighbridge control the tracking of the PFAS contaminated material and compliance with acceptance criteria.

Landfilling of waste

The Facility will use landfill Cell 16, Cell 17 and future new cells for the disposal of PFAS contaminated waste. These two landfill cells and the proposed Cell 18 and Cell 19 have the composite liner and leachate collection system.

Other approvals

The Licence Holder has provided the following information relating to other approvals as outlined in Table 6.

Table 6: Relevant approvals

Legislation	Number	Approval
<i>Planning and Development Act 2005- City of Rockingham</i>	NA	<i>Ongoing landfill operation - No approval required</i>

Amendment history

Table 7 provides the amendment history for L7064/1997/11.

Table 7: Licence amendments

Instrument	Issued	Amendment
L7064/1997/11	04 September 2015	Licence re-issue
L7064/1997/11	01 October 2015	Licence amendment to correct conditions
L7064/1997/11	24 March 2016	Licence amendment to increase Category 62 throughput
L7064/1997/11	27 April 2018	Amendment Notice 1 – Addition of household hazardous waste types and green waste storage.
L7064/1997/11	21 March 2019	Amendment Notice 2 – approval to accept and bury PFAS contaminated solid waste in existing Class III landfill cells (16 and 17)

Location and receptors

Table 8 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 8: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Residential Property	Approximately 470 metres south
Residential Premises – Suburb of Wellard	Approximately 550 metres north
Commercial/Industrial properties	Immediately adjacent to the west and south boundary

Table 9 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 9: Environmental receptors and distance from activity boundary

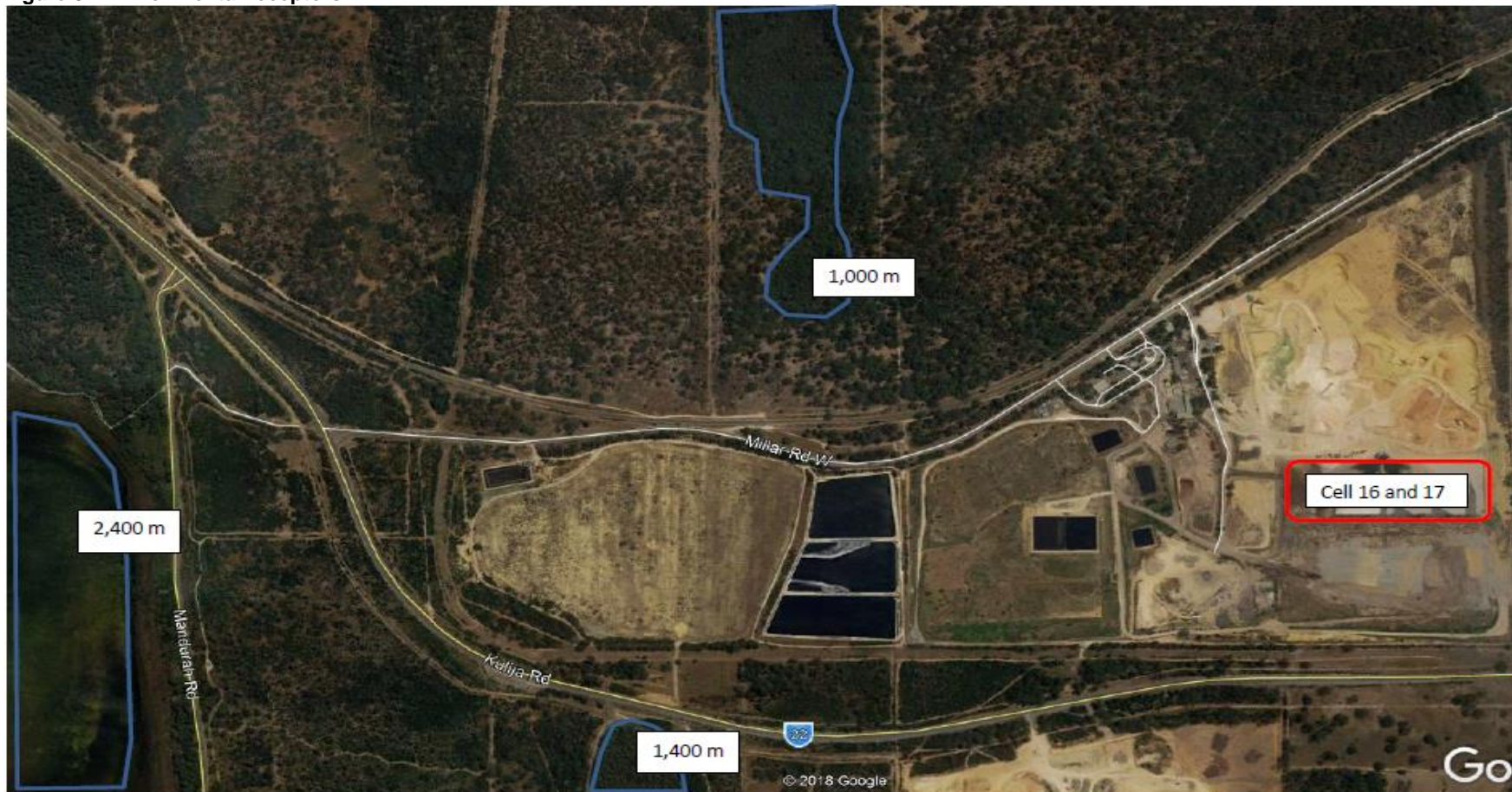
Environmental receptors	Distance from Prescribed Premises
Groundwater	Groundwater is located approximately 10 metres below ground level
Conservation category wetlands	Approximately 1000 metres north west Approximately 1400 metres south west

Bush Forever site 349 (also designated as Parks and Wildlife Managed Land)	Adjacent to the north
Bush Forever site 356 (also designated as Rockingham Lakes regional parkland)	Approximately 850 metres west
Threatened Ecological Communities	A number of communities are identified immediately adjacent to the Premises.
Unnamed surface water body (within Bush Forever Site 349)	Approximately 360 metres north west- normally dry

Figure 2: Sensitive receptors- residential premises



Figure 3: Environmental receptors



Risk assessment

Table 10 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 10: Risk assessment for proposed amendments during operation

Source/Activities		Risk Event				Consequence rating	Likelihood rating	Risk	Reasoning
		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts				
Cat 64 Class III putrescible landfill site	Acceptance and burial of Class III PFAS contaminated solid wastes within Class III cells	Dust: associated with waste handling]	Residential Receptors Commercial/Industrial properties	Air/Wind dispersion	Health and amenity impacts	Slight	Possible	Low	The Licensee has committed to the following: If dust is generated from the waste the waste will be wetted down using a water truck; All waste will be covered with 300mm of soil at the end of the day in accordance with the Facility Licence L7064/1997/13, Table 1.2.5. Furthermore The Delegated Officer considers the dust emissions associated with waste handling of PFAS contaminated waste are likely to be localised with minimal on-site impacts and with emissions only potentially occurring at some time, therefore the resultant risk of dust emissions is Low.
		Noise: associated to truck movements	Residential Receptors Commercial/Industrial properties	Air/Wind dispersion	Health and amenity impacts	Slight	Possible	Low	The primary noise emissions will be generated from the movement of trucks The Delegated Officer considers noise emissions are adequately addressed under the provisions of the Environmental Protection (Noise) Regulations 2002.
		Odour: associated with disposal	Residential Receptors Commercial/Industrial properties	Air	Amenity	Slight	Unlikely	Low	The Delegated Officer considers that PFAS contaminated wastes, which are likely to be predominantly in the form of soils, are unlikely to be an odorous waste therefore the resultant risk of odour emissions is Low.
		Waste: landfill leachate	Conservation category wetland	Surface water run-off / Groundwater	Impacts to water quality	Major	Unlikely	Medium	

				discharges					
			Bush Forever sites 349 and 356	Surface water run-off/ overland flow	Impacts to native vegetation, Impacts to surface water quality within Site 349, Health impacts to ecosystem	Major	Unlikely	Medium	The Delegated Officer considers leachates may cause low level onsite or minimal offsite impacts to these potential receptors (minor consequence), and this would only happen in exceptional circumstances (rare likelihood) due to the proposed storage infrastructure controls in place
			On-site and neighbouring soils (including Threatened Ecological Communities)	Surface water run-off/ overland flow	Contamination of soil, vegetation and impacts to threatened ecological communities	Major	Unlikely	Medium	
			Groundwater	Seepage	Contamination or deterioration of local/ regional groundwater quality	Major	Unlikely	Medium	
									<p>The Delegated Officer has reviewed the following information regarding the risk of leachate migrating and considers the existing Class III landfill cells have been constructed appropriately for the intended purpose to dispose of Class III contaminated solid wastes:</p> <ul style="list-style-type: none"> • The Facility is an existing landfill with a composite liner system of HDPE and GCL; • Both geosynthetic materials have a permeability of less than 1×10^{-9} m/s. The composite liner system provides more than adequate protection to the groundwater beneath the facility; • The landfill is not located Within 1,000 m of a surface water body that supports an aquatic environment; or • The landfill is not located

									<p><i>within 1,000 m of a drain that is connected to an aquatic environment;</i></p> <ul style="list-style-type: none"> • <i>a leachate collection system, lined leachate ponds with a composite liner system the same as the new landfill cells, consisting of 2.0 mm HDPE and a GCL layer;</i> • <i>stormwater management controls in place;</i> • <i>Groundwater monitoring regime (considers that the current and proposed monitoring network appears to be adequate for targeted PFAS analysis)</i> • <i>The handling of PFAS at the landfill involves the deposition of the waste directly in the landfill and covering of the waste on a daily basis;</i> • <i>Lake Cooloongup is located 1.5 km from the western boundary of the Facility; and</i> • <i>Will only accept class III level waste.</i>
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Risk Assessment

DWER has given consideration to the following aspects in its assessment relating to landfills accepting PFAS containing wastes:

- siting of the landfill must not be;
 - i. on very high or high vulnerability aquifers;
 - ii. within 1000m of a surface water body that supports an aquatic environment (including groundwater dependent ecosystems); or
 - iii. within 1000m of a surface water drain that is connected to groundwater and/or discharges directly into an aquatic environment (including groundwater dependent ecosystems) or a water body that supports fish species that may be caught and consumed.
- landfill controls in place (design of the existing Class III landfill cells and design of existing leachate management and control systems);
- landfill management practices; and
- proposed groundwater and surface water monitoring program

Key findings:

Surface water body: the **Delegated Officer** considers that given existing controls relating to retaining direct captured rainfall within landfill areas and diverting to existing leachate collection ponds, it is unlikely that surface water run-off would occur from active landfill areas.

Groundwater: The **Delegated Officer** considers that the facility is an existing landfill with a composite liner system of HDPE and GCL. Both geosynthetic materials have a permeability of less than 1×10^{-9} m/s. The new cells have a leachate collection system and lined leachate ponds with a composite liner system the same as the new landfill cells, consisting of 2.0 mm HDPE and a GCL layer.

The **Delegated Officer** is also aware that according to the "*Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)*", the landfill must not be located on limestone soils with a groundwater table of less than 30 m below ground level. The MRLF is located on the Swan Coastal Plain within the Spearwood Dune System and the site largely comprises of siliceous sands and the depth of groundwater is between 11.5 to 33.5 metres below ground level (approximately 2-3 metres below the base of the landfill cells), however the double liner system provides more than adequate protection to the groundwater beneath the facility.

Decision

Based on the above risk assessment the Delegated Officer has determined to amend the Licence to authorise the acceptance and burial of Class III PFAS contaminated solid wastes. The following amendments are proposed:

- Authorisation to accept/bury Class III PFAS contaminated solid wastes in Class III cells;
- Waste concentrations must be less than the relevant leachable concentration and the concentration limit values for a class III landfill; and
- Groundwater monitoring will include the testing of Perfluorohexane Sulfonate Acid

(PFHxS), Perfluorooctane Sulfonate Acid (PFOS) and Perfluorooctanoic Acid (PFOA).

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 7 February 2019. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in Appendix 2.

Amendment

1. Table 1.2.3 of Condition 1.2.3 of the licence is amended by the insertion of the red text shown in underline below:

Table 1.2.3: Waste acceptance		
Waste type	Quantity limit tonnes/ year	Specification¹
Inert Waste Type 1	Combined total of 50,000 tonnes per annual period	Waste containing visible asbestos or ACM shall not be accepted
Inert Waste Type 2		No more than 100 tyre units stored on the premises
Special Waste Type 1	Combined total of 450,000 tonnes per annual period	Non-friable asbestos, friable asbestos and asbestos contaminated soil
Special Waste Type 2		Biomedical/clinical waste which is radioactive must not be accepted ²
Clean Fill		None specified
Contaminated Solid Waste		Must meet the Acceptance Criteria for Class III landfills, as specified in the Landfill Definitions.
Putrescible Waste		Must be accepted in accordance with the DoA <i>PMS 2015</i>
Quarantine Waste		
<u>Special Waste Type 3</u>		
Green waste	7,000 tonnes per annual period	None specified
Hazardous wastes	up to 99 tonnes per annual period	Limited to paints and resins, waste oils, and household hazardous wastes

2. Table 1.2.4 of Condition 1.2.5 of the Licence is amended by the insertion of the red text shown in underline below:

Table 1.2.4: Waste processing		
Waste type(s)	Process	Process limits^{1,2}
All	Disposal of waste by landfilling	<ul style="list-style-type: none"> Shall only take place within the area depicted in Cells 12 to 28 shown on the Map of Site Features in Schedule 1. The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2.6m.
Clean Fill	Receipt and handling prior to disposal by landfilling	None specified
Contaminated Solid Waste	Disposal of waste by landfilling	
Inert Waste Type 1	Receipt, handling, storage prior to removal offsite or disposal by landfilling	<ul style="list-style-type: none"> Crushing and screening of Inert Waste Type 1 is not permitted
Inert Waste Type 2	Receipt, handling, storage prior to disposal by landfilling or removal offsite	None specified
Putrescible Waste	Receipt, handling, storage prior to disposal by	<ul style="list-style-type: none"> Only to be stored and sorted on a hardstand area bunded to prevent run-off; Shall not be stored on the site for longer than 24 hours

	landfilling	
<u>Green Waste</u>	<u>Receipt, handling, storage prior to removal offsite or disposal by landfilling</u>	<ul style="list-style-type: none"> • <u>Shall not be burned;</u> • <u>Shall only be stored on a compacted limestone hardstand;</u> • <u>Unprocessed green waste shall only be stored at the Premises for a maximum of 4 months;</u> • <u>Mulched green waste to be stored in windrows no more than 3 metres high, 4 metres wide and be separated by at least 5 metres;</u> • <u>Mulched green waste is to be removed within 1 week of mulching except for volumes being kept at the Premises for use by the Licence Holder; and</u> • <u>Mulched green waste windrows with an internal temperature exceeding 80 degrees Celsius shall be turned, mixed or otherwise treated, to reduce the temperature;</u>
Special Waste Type 1 (Asbestos Waste)	Receipt and handling prior to disposal by landfilling	<ul style="list-style-type: none"> • Only to be disposed of into a designated asbestos disposal area within the landfill; • Not to be deposited within 2m of the final tipping surface of the landfill; and • No works shall be carried out on the landfill that could lead to a release of asbestos fibres.
Special Waste Type 2		<ul style="list-style-type: none"> • Only to be disposed of into a designated biomedical waste disposal area within the landfill cells as defined in Schedule 1; and • Not to be disposed within 2m of the final tipping surface of the landfill; and • No works shall be carried out on the landfill that could lead to biomedical wastes being excavated or uncovered
Quarantine Waste	Receipt and handling prior to disposal by landfilling	<ul style="list-style-type: none"> • Shall be managed in accordance with the DoA <i>PMS 2015</i>
Hazardous Waste	Receipt and handling prior to removal offsite	<ul style="list-style-type: none"> • Household hazardous wastes (excluding paint) shall be stored in dedicated impermeable bunded storage areas • Paint shall be stored in dedicated storage containers ('stillages') provided by the Paintback Scheme • Shall not be decanted or treated at the Premises
<u>Special Waste Type 3</u>	<u>Receipt and disposal by landfilling</u>	<ul style="list-style-type: none"> • <u>Only to be disposed of into a designated disposal area within the landfill (cells 16 and 17);</u> • <u>Waste concentrations must be less than both the relevant leachable concentration (ASLP conducted at both pH 5 and pH 7) and the concentration limit values for the class III landfill; and</u> • <u>Waste to be covered with 300mm of soil at the end of the day.</u>

3. Table 1.2.5 of Condition 1.2.7 of the License is amended by the insertion of the red text shown in underline below:

Table 1.2.5: Cover requirements¹	
Waste Type	Cover requirements
Inert Waste Type 1	No cover required
Inert Waste Type 2	To be covered by the end of the working day in which the waste was disposed with 100mm of Inert Type 1 or soil
Special Waste Type 1	To be covered with 300mm of soil or 1000mm of inert waste 1 as soon as practicable and before compaction
Special Waste Type 2	To be covered with 300mm of soil or 1000mm of inert waste type 1 as soon as practicable and before compaction
Putrescible Waste and contaminated solid waste	<ul style="list-style-type: none"> • To be covered with 150mm of Inert Waste type 1 or soil as soon as practicable and not later than the end of the working day; and • To be covered with 1000mm of inert Waste Type 1 or soil within 3 months of achieving final waste contours
Quarantine waste	In accordance with DoA <i>PMS 2015</i>
<u>Special Waste Type 3</u>	<u>Waste to be covered with 300mm of soil at the end of the day or as soon as practicable</u>

4. Table 2.2.1 of Condition 2.2.1 of the Licence is amended by the insertion of the red text shown in underline below:

Table 2.2.1: Monitoring of inputs and outputs				
Input/Output	Parameter	Units	Averaging period	Frequency
Waste Inputs	Inert Waste Type 1, Inert Waste Type 2, Special Waste Type 1, Special Waste Type 2, Clean Fill, Solid Contaminated Waste, Putrescible Waste and Quarantine Waste, Green waste, Household hazardous waste, <u>Special Waste Type 3</u>	Tonnes	N/A	Weekly (estimates recorded during weekly inspections)
Waste Outputs	Waste type as defined in the Landfill Definitions			Each load leaving or rejected from the Premises

5. Table 2.4.1 of Condition 2.4.1 of the Licence is amended by the insertion of the red text shown in underline below

Table 2.4.1: Monitoring of ambient groundwater quality

Monitoring	Parameters	Units	Averaging period and Frequency		
Monitoring Bores Bore 1 (S, M, D) Bore 2 (S, M, D) Bore 3 (S, M, D) Bore 4 (S, M, D) Bore 5 (S, M, D) Bore 6 (S, M, D) Bore 7 (S, M, D) Bore 19 Bore 20	<u>Monocyclic Aromatic Hydrocarbons</u> Benzene, Ethyl benzene, Toluene and Xylenes.	µg/L	Annually (During August or September)		
	<u>Polycyclic Aromatic Hydrocarbons (PAHs):</u> Acenaphthene, Anthracene, Benz(a)pyrene, Fluroanthene, Napthalene and Pyrene.				
	<u>Organochlorine pesticides:</u> Aldrin, Chlorpyrifos, Chlordane and its metabolites, DDT and metabolites, Dieldrin, HCB, Heptachlor and its epoxide and Lindane.				
	<u>Organophosphates:</u> Parathion, Demeton-S-methyl, Maldison, Diazinon, Dimethoate, Fenamiphos and Fenthion.				
	<u>Other:</u> Atrazine, TCE, PCE and Polychlorinated Biphenyls (PCBs).				
	Ammonia-Nitrogen (NH ₃ -N), COD (Chemical Oxygen demand), Nitrate Nitrogen (NO ₃ -N), Total Phosphorus, Total Nitrogen, TDS (Total Dissolved Solids) and TOC (Total Organic Carbon).			mg/L	Six-monthly (During February or March and August or September)
	<u>Major cations and anions:</u> Total Potassium, Chloride and Sulphate.				
<u>Metals:</u> Total Arsenic, Cadmium, Chromium, Copper, Iron (total), Lead, Manganese, Nickel and Zinc					
Ph ¹	pH units				
Electrical Conductivity ¹	µS/cm				
Standing Water Level (SWL) ^{1,2}	m AHD				
Dissolved Oxygen (DO)	mg/L				

Table 2.4.1: Monitoring of ambient groundwater quality

Monitoring	Parameters	Units	Averaging period and Frequency
<u>Bore MR3</u> <u>Bore MR5</u> <u>Bore MR7</u> <u>Bore MR19</u> <u>Bore MR20</u>	<u>6:2 Fluorotelomer sulfonate (6:2 FtS)</u> <u>8:2 Fluorotelomer sulfonate (8:2 FtS)</u> <u>Perfluorooctane sulfonamide (PFOSA)</u> <u>N-Methy-heptade cafluorooctanne sulfonamide (N-Me-FOSA)</u> <u>N-Ethyl-heptade cafluorooctanne sulfonamide (N-Et-FOSA)</u> <u>N-Methy-heptade cafluorooctanne sulfonamidoethanol (N-Me-FOSE)</u> <u>N-Ethyl-heptade cafluorooctanne sulfonamidoethanol (N-Et-FOSE)</u> <u>Perfluorobutane sulfonate (PFBS)</u> <u>Perfluorohexane sulfonate (PFHxs)</u> <u>Perfluorooctane sulfonate (PFOS)</u> <u>Perfluorodecane sulfonate (PFDCS)</u> <u>Perfluorohexanoic acid (PFHxA)</u> <u>Perfluoroheptanoic acid (PFHpA)</u> <u>Perfluorooctanoic acid (PFOA)</u> <u>Perfluorodecanoic acid (PFDA)</u> <u>Perfluoropentanoic acid (PFPeA)</u> <u>Perfluoroundecanoic acid (PFUnA)</u> <u>Perfluorododecanoic acid (PFDoA)</u> <u>Perfluorotridecanoic acid (PFTriA)</u> <u>Perfluorotetradecanoic acid (PFTeA)</u>	<u>ug/L</u>	<u>Annually</u> <u>(During August or September)</u>

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

Note 2: SWL shall be determined prior to collection of other water samples

Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L7064/1997/14 – City of Rockingham	L7064/1997/11	accessed at www.dwer.wa.gov.au
2	DER, July 2015. <i>Guidance Statement: Regulatory principles.</i> Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
3	DER, October 2015. <i>Guidance Statement: Setting conditions.</i> Department of Environment Regulation, Perth.	DER 2015b	
4	DER, August 2016. <i>Guidance Statement: Licence duration.</i> Department of Environment Regulation, Perth.	DER 2016a	
5	DER, November 2016. <i>Guidance Statement: Risk Assessments.</i> Department of Environment Regulation, Perth.	DER 2016b	
6	DER, November 2016. <i>Guidance Statement: Decision Making.</i> Department of Environment Regulation, Perth.	DER 2016c	

Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on 7 February 2019. Comments received from the Licence Holder have been considered by the Delegated Officer as shown below.

Condition	Summary of Licence Holder comment	DWER response
Table 1	Add definition of Special Waste Type 3	Definition added
Tables 1.2.3, 1.2.4 and 2.2.1	Suggest that using the term 'Special Waste Type 3' is used instead of 'PFAS contaminated solid waste' so that the amendment is consistent with the rest of the licence & the 'Landfill Waste Classification and Waste Definitions (amended 2018)' document	Changes adopted