



## Application for Licence Amendment

### Part V Division 3 of the *Environmental Protection Act 1986*

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<b>Licence Number</b>	L7064/1997/11
<b>Licence Holder</b>	City of Rockingham
<b>File Number</b>	2010/005913-2
<b>Premises</b>	Millar Road Landfill Facility 204 Millar Road West BALDIVIS 6171  Legal description – Lot 2170 on Plan 211650 Certificate of Title Volume 1464 Folio 465 As defined by the coordinates in Schedule 2 of the Revised Licence
<b>Date of Report</b>	02 March 2023
<b>Decision</b>	Revised licence granted

**MANAGER WASTE INDUSTRIES  
REGULATORY SERVICES**

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

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## 1. Decision summary

Licence L7064/1997/11 is held by the City of Rockingham (Licence Holder) for the Millar Road Landfill Facility (the Premises), located at 204 Millar Road West, Baldivis (Lot 2170 on Plan 211650, Certificate of Title Volume 1464 Folio 465).

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L7064/1997/11 has been granted.

The Revised Licence issued as a result of this amendment consolidates and supersedes the existing Licence previously granted in relation to the Premises. The Revised Licence has been granted in a new format with existing conditions being transferred, but not reassessed, to the new format.

## 2. Scope of assessment

### 2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>. Due regard has also been given to the design, operation, rehabilitation and aftercare sections of the document titled 788.3: *Siting, design, operation and rehabilitation of landfills* (EPAV 2015).

### 2.2 Application summary

On 30 September 2022, the Licence Holder submitted an application to the department to amend Licence L7064/1997/11 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Changes to *Category 64: Class II or III putrescible landfill site* activities, including:
  - Extension of the landfill capping layer over the south and eastern slopes of landfill cell 10 and the southern slope of landfill cell 11;
- Addition of *Category 57: Used tyre storage (general)* due to:
  - Increasing waste tyre storage from 100 tyres at one time to 250 tyres at one time;
- Changes to *Category 61A: Solid waste facility* activities, including:
  - Increasing greenwaste throughput from 7,000 tonnes per annual period (tpa) to 10,000 tpa; and
  - Decreasing spacing between greenwaste stockpiles from 5 m to 3 m;
- Changes to *Category 62: Solid waste depot* activities, including:
  - Acceptance and temporary storage of E-waste, household batteries, lithium batteries and lead-acid batteries; and
  - Increasing hazardous waste throughput from 99 tpa to 1,000 tpa, to incorporate the acceptance of the solid hazardous wastes listed above (batteries);

- Addition of *Category 61: Liquid waste facility* due to:
  - Increasing hazardous waste throughput from 99 tpa to 1,000 tpa, to incorporate increased acceptance of liquid household hazardous wastes and waste paint; and
- Additional administrative amendments to the licence summarised in Table 2.

Table 1 below summarises the proposed changes to the categories of prescribed premises on the existing Licence.

**Table 1: Proposed design or throughput capacity changes**

Category	Current design or throughput capacity	Proposed design or throughput capacity	Reason for proposed amendment
57	N/A – new category	Up to 250 used tyres at any one time	Downstream tyre recycling facilities are experiencing capacity issues resulting in tyres being removed from the Premises less frequently.
61	N/A – new category	1,000 tonnes per annual period	Increased volumes of liquid household hazardous waste are being received from ratepayers.
61A	7,000 tonnes per annual period	10,000 tonnes per annual period	To account for large spikes in green waste volumes received after storm events and increasing volumes forecast to be received from ratepayers.
62	50,000 tonnes per annual period	No change to capacity	Acceptance and temporary storage of E-waste, household batteries, lithium batteries and lead-acid batteries.
64	450,000 tonnes per annual period	No change to capacity	Cells 10 and 11 were previously capped with a synthetic liner, however the cap did not fully extend down the east and south slopes of the landfill and beyond the edge of the basal liner.  As a result of excessive leachate generation during the winter of 2021, the Licence Holder undertook an investigation into the leachate generation issues and determined that the solution was to extend the synthetic capping system down the eastern and southern slopes of Cell 10 and 11 and 5 m beyond the edge of the base liners of the landfill cells.

**Table 2: Proposed administrative amendments**

Condition or Section	Requested administrative amendments
Premises Description and Licence Summary	Remove the outdated reference to a 390,000 tonnes per annum throughput
	Remove outdated references to the active landfill cell numbers and total number of cells
	Remove the outdated reference to AGL Energy and replace with LMS Energy
	Remove the outdated reference to the expected closure of the landfill being 2035. Due to the opening of two Waste to Energy facilities in the southern metropolitan area, the landfill is now expected to operate until at least 2055
Annual Period	Change the Annual Period from calendar year to financial year
Table 1.2.4	Remove reference to disposal of Special Waste Type 3 within Cell 16 and 17 so the condition will be applicable to future landfill cells constructed to the same specifications.
Condition 1.2.9	Correct reference error from Schedule 2, Part A to Schedule 3
Condition 1.3.1	Correct reference error from Table 1.4.1 to Table 1.3.1
Condition 2.3.2	Change condition number from 2.3.2 to 2.3.1
Table 2.3.1	Replace reference to Leachate Pond 2 with Leachate Ponds 4A/4B, as this is outdated
	Remove the <i>total</i> term for arsenic monitoring as this is incorrect. Total in relation to metals analysis means unfiltered samples, however it is understood that this was intended to mean that arsenic is not speciated into As(III) and As(V)
	Replace the term methylbenzene with ethylbenzene and ben(a)pyrene with benzo(a)pyrene, as these are the correct descriptions for these parameters
Schedule 1	Replace Premises Map and Map of Site Features with the updated maps provided in the application

The application had also requested an amendment to allow for the temporary storage of leachate in depressions on the landfill surface during extreme weather periods, in place of removal offsite. However, this activity was not considered to be consistent with the proposal description and implementation conditions previously referred under Part IV of the EP Act. Subsequently, the Licence Holder withdrew this activity from the scope of the application.

## 2.3 Part IV of the EP Act

Development and operation of the landfill facility was referred to the Environmental Protection Authority (EPA) under Part IV of the EP Act in 1990. The proposal was assessed at the level of Public Environmental Review (PER). The PER was issued in June 1991 for an eight-week public review period and the Report and Recommendations of the EPA was published through EPA Report Number 596 in November 1991.

A decision on the implementation of the proposal was granted by the WA Minister for the Environment on 1 July 1992 through Ministerial Statement No. 271 (MS:271).

MS:271 contains a number of conditions relating to the design and management of the landfill. The conditions considered potentially relevant to the scope of the application are summarised in Table 3.

**Table 3: Relevant conditions of Ministerial Statement 271**

Condition number	Condition requirements	Relevance to amendment application
2	Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.	Temporary storage of leachate in depressions on the landfill surface was not considered to be consistent with the manner of detailed implementation of the proposal submitted by the proponent (Licence Holder). The proponent has not sought any change to the detailed implementation through the EPA since the initial referral in 1990.
5-2	Within two years of the date of commencement of construction, the proponent shall prepare a draft decommissioning and post closure management plan, to the satisfaction of the EPA	The draft Millar Road Landfill Facility Rehabilitation and Post-Closure Plan was previously provided to the satisfaction of the EPA
5-3	At least two years prior to closure, the proponent shall prepare the final decommissioning and post closure management plan, to the satisfaction of the EPA	A final plan has not been developed as the lifespan of the landfill is currently anticipated to last up to 2055
5-4	The proponent shall implement the final decommissioning and post closure management plan required by condition 5-3, to the satisfaction of the EPA	
9.3 (28)	The Proponent will ensure that, upon completion of the refuse disposition, landfill cells will be covered with a layer of granular material, bedding sand (below and above the barrier membrane), a composite barrier membrane of low permeability, further granular material, and a final layer of soil suitable for vegetation establishment	The Licence Holder considers that the requirements of this condition have been incorporated into the capping design.  Information relating to the design of the capping layer is contained in Section 4.2
9.3 (29)	The Proponent will ensure that, as part of the ongoing operational practice, the final landfill surface will be constructed to a predetermined crossfall to enhance surface run-off while safeguarding against erosion, and to ensure that final contours of the site will not constrain future use for light industry	The Millar Road Landfill Facility Rehabilitation and Post-Closure Plan provides a conceptual top of waste profile that provides a stable and graded surface to enhance surface water run-off. Operations are undertaken according to this design.

Condition number	Condition requirements	Relevance to amendment application
9.3 (30)	The Proponent will ensure that, on completion of each landfill cell, shallow rooted native vegetation (in accordance with advice from the Department of Conservation and Land Management) will be established and maintained	The capping design includes the establishment of shallow rooted plant species, predominantly grasses.

## 2.4 Consolidation of Licence

As part of this amendment package the department has consolidated the licence by incorporating changes made under the previous amendments as summarised in Table 4.

**Table 4: Licences consolidated in this amendment**

Instrument	Issued	Summary of approval
L7064/1997/11	04/09/2015	Licence renewal granted
L7064/1997/11	01/10/2015	Licence amendment to correct conditions
L7064/1997/11	24/03/2016	Licence amendment to increase Category 62 throughput
L7064/1997/11	29/04/2016	Notice of Amendment of Licence Expiry Dates
L7064/1997/11	27/04/2018	Amendment Notice 1 to allow for the acceptance of household hazardous waste types and storage of green waste
L7064/1997/11	20/03/2019	Amendment Notice 2 to allow the acceptance and burial of PFAS contaminated solid waste in existing Class III landfill cells 16 and 17
L7064/1997/11	20/12/2019	DWER initiated amendment to give effect to the Minister's Appeal Determination of 12 September 2019 and amalgamate/consolidate separately issued licence amendment notices in the licence
L7064/1997/11	DD/03/2023	This amendment

The obligations of the Licence Holder have not changed in consolidating the licence. The department has not undertaken any additional risk assessment of the Premises related to previous Amendment Notices.

In consolidating the licence, the CEO has:

- updated the format and appearance of the Licence;
- revised licence condition's numbers, removed any redundant conditions and realigned condition numbers for numerical consistency;
- removed unenforceable terms like *as soon as practicable* and replaced with specified time frames where one was not already listed; and
- corrected clerical mistakes and unintentional errors.

The full consolidation of licence conditions as they relate to this Revised Licence are detailed in Section 7.1. Previously issued Amendment Notices will remain on the department's website for future reference and will act as a record of the department's decision making.



### 3. Premises operations

The existing infrastructure and operations (prior to this application) at the Premises considered relevant to the scope of the application are summarised below.

#### 3.1 Leachate management

The active and recent landfill cells at the Premises are provided with a leachate management system that incorporates the following aspects:

- A base composite liner system of HDPE and GCL that provides a low permeability barrier for leachate infiltration to groundwater;
- A pipework and drainage system above the basal liner to collect leachate accumulating within the base of the landfill and direct it to the leachate sumps;
- A pumping system to extract leachate from the sumps and transfer it to one of the leachate ponds;
- Leachate ponds that include surface sprays for the storage and evaporation of leachate;
- Leachate recirculation systems for spraying leachate onto the surface of the landfill to increase leachate evaporation;
- Dedicated water cart for spraying leachate onto the active landfill surface; and
- A landfill capping design to minimise the generation of leachate post the closure of a landfill cell.

#### 3.2 Hazardous waste

The Licence Holder currently accepts and stores up to 99 tonnes per annual period of household hazardous wastes at the Premises including waste oil, household chemicals, fire extinguishers, flares, batteries, fluorescent lamps and tubes, smoke detectors, small household gas cylinders and paints.

Household hazardous wastes are accepted under the Household Hazardous Waste (HHW) Program. The HHW is delivered to the Premises by members of the public and placed in a dedicated storage area comprised of a concrete bund with raised edge containment. Site operators relocate waste materials to a storage shed where they are placed in segregated plastic boxes on shelves or onto self-bunded pallets for larger containers. Separate enclosed metal cabinets are available for oxidisers and flares.

The Premises has a dedicated metal storage tank for waste oil. The tank is covered to prevent rain entry. Waste motor and gear oil is delivered by the public and placed either on a self-bunded pallet, or on a draining section located within the tank.

Paint is also accepted at the Premises under the Paintback Scheme, which provides self-bunded stillages for separate storage of water-based and solvent-based paint. The self-bunded (fully contained and welded) metal stillages are 1.1 m x 1.1 m x 1.1 m in external dimensions and are designed to capture spills and leaks.

Paint is delivered to the Premises by both members of the public and commercial painters. Members of the public deliver paint to a bunded shed designed to capture spills and leaks during receipt and temporary storage of waste paint. Site operators then transfer the paint into the self-bunded stillages. Commercial painters are permitted to deposit paint directly into the stillages.

The stillages are progressively filled until there is sufficient volume to warrant removal. For paint, an estimated six tonnes (excluding weight of stillages) within 10 - 14 stillages will be on the Premises at any one time. The paint is then removed from the Premises and transported for further processing and disposal.

### 3.3 Green waste

The Licence Holder currently accepts, stockpiles and mulches green waste that is received from local residents, commercial contractors and the City of Rockingham's operations. The green waste is stored on a limestone hardstand area. Once sufficient material has accumulated a shredder is brought onto the Premises to process the material.

Once mulched, the majority of the processed green waste is removed within one week and taken to a composting facility. The remaining portion of the material is stored on the Premises and used by the City for its parks and garden landscaping requirements, with a small amount made available to the public free of charge.

Mulched green waste is stored on the Premises in windrows typically 3.5 to 4.0 m high, approximately 10 m wide and with a fire break access of a minimum 5 m wide. The windrows are occasionally turned to prevent heat build-up and to maintain aerobic conditions.

## 4. Cell 10 and 11 capping

### 4.1 Background

The majority of landfill cells 10 and 11 at the Premises have previously been capped with a synthetic liner. However, after winter rainfall in 2021, pop-outs of landfill leachate were evident in the southern batters of the two cells. Following an investigation into the source of the leachate it was apparent that the pop-outs were occurring due to the synthetic liner component of the capping layer not being fully installed down the batter of the cells. Consequently, there is a need to conduct further works to extend the capping layer of Cell 10 and 11 to include the south and eastern batters of Cell 10 and the southern batter of Cell 11.

The Licence Holder has already undertaken some temporary repairs to the capping layer on the southern slopes of Cells 10 and 11 in May 2022. The temporary works improved the flow of stormwater down the slope of the cells and reduced infiltration into the waste mass. The temporary works acted to prepare the southern slope areas for the proposed works.

### 4.2 Capping design

The design of the additional landfill capping is consistent with the recent capping carried out on the eastern slopes of Cell 8 (early 2020) and the southern and western slopes of Cells 12 and 13 (2018). The landfill capping system relies on a number of components to reduce moisture ingress into the waste mass, reducing leachate generation within the landfill. The design incorporates the following layers, in ascending order:

- Soil cover layer over the waste mass;
- Coated GCL synthetic liner;
- Cushion geotextile;
- Sand drainage layer;
- Soil growing medium; and
- Revegetated final cap surface.

The composite GCL layer provides the primary barrier to stormwater infiltration through the capping layer. The GCL is coated with polyethylene that protects it from seasonal wetting and drying cycles and from root penetration into the synthetic clay layer within the material. The design also incorporates a taped joint along all edges of the GCL panels to further prevent root penetration.

The sand drainage layer above the GCL captures and drains any stormwater that infiltrates after accumulating in the vegetated surface of the cap. This reduces any hydrostatic pressure build-up on the synthetic liner and moisture ingress through the liner.

The growing medium above the soil drainage layer absorbs and retains winter rainfall, up to the field moisture capacity of the soil, to sustain vegetation growth over the dry summer months. Moisture uptake and evapotranspiration by vegetation further reduces moisture ingress and potential leachate generation.

### 4.3 Capping works

The proposed works associated with the extension of the capping layer consists of the following activities:

- Construction Quality Assurance (CQA) testing, inspections and approval of synthetic liner materials;
- Clearing and grubbing of the works area;
- Surface trimming of soil cover to achieve a uniform surface;
- Installation of compacted fill where necessary to ensure a minimum soil cover over the waste surface;
- Subgrade preparation prior to liner installation;
- Installation of the synthetic liner materials, including tie-ins, joins and welding;
- Installation of the sand drainage layer;
- Installation of the growing medium;
- Ripping of the final surface; and
- Surface vegetation establishment when the weather is suitable for rapid plant establishment (autumn/winter and early spring).

The new capping liner will extend 2 m over the existing Cell 10 and 11 GCL liner to ensure an effective join interface between the new and existing works. The new liner will then extend a minimum of 5 m beyond the perimeter of the landfill cell basal liner, to ensure there is a barrier layer over the whole waste mass that will convey stormwater falling on the cap beyond the landfill cell footprint. Boot seals will be installed around existing landfill gas extraction and leachate management infrastructure to minimise any surface water ingress or landfill gas escape around these penetrations.

The majority of earthworks have already been completed when implementing the temporary repairs in May 2022. The remaining earthworks are isolated to minor trimming of soil cover and any filling of slopes that may be required for surface preparation. Soil material that was removed during the temporary repairs has been stockpiled at the base of the cell's southern slopes and will be reused as the growing medium on the extended cap.

The upper surface of the soil cap will be scarified and hydro-seeded to encourage establishment of a vegetated cap on the landfill surface. The seeding will consist of sub-tropical cereal rye, native grass seeds and shallow rooted shrubs.

There is no reshaping of the landfill waste mass associated with the proposed capping works. The existing soil cover layer above the waste mass will be removed so that the waste profile is unaffected by the proposed capping works.

The Licence Holder intends to commence the capping works as soon as possible following the determination of the amendment application. Works at the Premises are expected to occur approximately two months after determination, in order to allow time for the ordering and CQA testing of liner materials.

## 4.4 Stability

The Licence Holder undertook a stability assessment of the capping layer on the eastern slope of cell 10, however no assessment was undertaken for the southern slopes of Cells 10 and 11. This was due to the southern slopes of Cell 10 and 11 being at a lower angle and length than the east of Cell 10, indicating they would be more stable.

The stability assessment for the east of Cell 10 was based on the worst-case scenario of the finished waste profile being at a slope of 1 (V) in 3.2 (H) and being a continuous slope of 50 m long. The outcome of the stability assessment was that the proposed capping design was suitably stable and achieved an acceptable factor of safety for each condition that was considered.

## 4.5 Construction Quality Assurance

A CQA Plan has been developed to provide guidance as to the CQA requirements for the construction activities. The CQA Plan sets out the extent of the construction works covered by the CQA Plan, including the proposed testing requirements, inspection, and verification procedures to demonstrate that the materials and works meet the design and specification requirements. The key aspects of the CQA plan are contained below:

- Installation and joining of the GCL will be undertaken by an Installer who has installed and joined a minimum of 100,000 m<sup>2</sup> of the GCL type and proposed joining method.
- Installation will be performed under the direction of a Field Installation Supervisor (FIS) who shall be responsible throughout the GCL installation, for GCL panel layout, joining, patching, repairs and all other activities of the liner sub-contractor.
  - The FIS will have experience with the installation and joining of a minimum of 10 projects involving a total of 500,000 m<sup>2</sup> of the GCL type.
- Joining will be performed under the direction of a Master Installer (MI), who may also be the Field Installation Supervisor.
  - The MI will have experience with a minimum of 300,000 m<sup>2</sup> of the GCL type and joining method.
- The FIS and/or MI will be present whenever installation and joining is performed.
- An independent CQA Consultant will be appointed that has experience and knowledge of GCL and joining performance characteristics to verify that the Works have been carried out according to specifications.
  - The duties of the CQA Consultant include inspections, verifications, audits and evaluation of materials and workmanship, provision of advice on installation, repair, and covering of the GCL lining system and issuing a final CQA Report documenting the quality of the constructed capping.
- GCL rolls or portions of rolls with moisture content equal or above 40% by weight (ASTM D5993) may be rejected, as instructed by the Superintendent. GCL rolls with damaged wrapping and moisture content lower than 40% will be approved for use.
- Daily reports for all accomplished works will be created that include the following:
  - Total amount and location of GCL placed; and,
  - Drawings of the previous day's installed GCL showing panel numbers.
- The GCL liner material will be reinforced and comprised of both woven and non-woven geotextile fully needle punched and heat bonded together to contain the bentonite powder, with the specifications shown in Table 5.

**Table 5: GCL liner manufacturer specifications**

Property	Test	Frequency	Value
Montmorillonite content	XRD (X-ray diffraction) Quantitative Mineralogy Analysis	50 tonnes	> 70 wt%
Carbonate content	-	50 tonnes	1 - 2 wt%
Bentonite form	-	50 tonnes	Natural Na-bentonite or >80 wt% Sodium as activated bentonite
Particle size	AS 1289-3.6.2	50 tonnes	Powdered (e.g. 80% passing 75 micron sieve) or Granulated (e.g. < 1% passing 75 micron)
Cation exchange capacity	Methylene blue method	50 tonnes	≥ 70 meq/100 g (or cmol/kg)
Free Swell (bentonite) (min. av)	ASTM D5890	50 tonnes	≥ 24 mL/2g
Moisture Content (bentonite)	ASTM D5993	2,500 m <sup>2</sup>	≤ 25% at Manufacture ≤ 35% Site Samples
Fluid Loss (bentonite)	ASTM D5891	50 tonnes	≤ 18 ml max
Polymer Coating (min. av)	ASTM D5261	4,000 m <sup>2</sup>	≥ 200 g/m <sup>2</sup>
Top Geotextile Mass (min. av)	ASTM D5261	20,000 m <sup>2</sup>	≥ 200 g/m <sup>2</sup>
Mass of GCL (min. av)	ASTM D5993	2,500 m <sup>2</sup>	≥ 5,000 g/m <sup>2</sup>
Mass of Bentonite (min. av)	ASTM D5993	2,500 m <sup>2</sup>	≥ 4,500 g/m <sup>2</sup>
Bottom Geotextile Mass (min. av)	ASTM D5261	20,000 m <sup>2</sup>	≥ 100 g/m <sup>2</sup>
Composite layer Thickness (Dry) (min. av)	ASTM D5199	2,500 m <sup>2</sup>	≥ 6 mm
Elongation (MD) (min. av)	ASTM D4632	20,000 m <sup>2</sup>	≥ 8%
Tensile Strength (min. av)	ASTM D6768	20,000 m <sup>2</sup>	≥ 10 kN/m
Peel Strength (min. av)	ASTM D6496	2,500 m <sup>2</sup>	≥ 360 N/m

Property	Test	Frequency	Value
Permeability	ASTM D5887	25,000 m <sup>2</sup>	≤ 5 x 10 <sup>-11</sup> m/s
Permeability coating (10 m head)	EN 14150	25,000 m <sup>2</sup>	≤ 1 x 10 <sup>-14</sup> m/s

- CQA testing of the GCL will be in accordance with Table 6.

**Table 6: CQA testing for GCL panels**

Item	Property	Standard	Frequency
Conformance testing (upon shipment of GCL to the premises)	Thickness (dry)	ASTM D1777	1 sample per 1,000 m <sup>2</sup>
	Mass per unit area of GCL	ASTM D5993	1 sample per 1,000 m <sup>2</sup>
	Moisture content of bentonite	AS 1289.2.1.1	1 sample per 2,500 m <sup>2</sup>
	Swell index/free swell of clay	ASTM D5890	1 sample per 1,500 m <sup>2</sup>
	Pell strength (for needle-punched products only)	ASTM D6496	1 sample per 1,000 m <sup>2</sup> for flatter areas
	Tensile strength	ASTM D4595	1 sample per 10,000 m <sup>2</sup>
	Index flux	ASTM D5887	1 sample per 10,000 m <sup>2</sup>
Visual inspection of GCL	Colour, thickness, uniformity of bentonite distribution, needle punching, presence of needles or broken needles, and sewing density or other faults in the material	-	Each roll during placement.  If thickness appears to be variable a check of the variability of the mass per unit area shall be conducted

- The geotextile material will not be made from recycled materials and will be 100% polyester or polypropylene (with the exception of inhibitors and/or carbon black added for UV resistance), with the specifications shown in Table 7.

**Table 7: Geotextile material manufacturer specifications**

Property	Value	Test method and frequency
Thickness (min. av)	≥ 4.0 mm	AS 2001-2.15 1 sample per 2,500 m <sup>2</sup>
Mass per Unit Area (min. av)	≥ 450 g/m <sup>2</sup>	AS 2001-2.13 1 sample per 2,500 m <sup>2</sup>

Property	Value	Test method and frequency
Wide Strip Tensile Strength (min. av)	37.5 kN/m	AS 3706-2 1 sample per 5,000 m <sup>2</sup>
Tear Strength (min. av)	≥ 830 N	AS 3706-3 1 sample per 5,000 m <sup>2</sup>
CBR Burst Strength (min. av)	≥ 6,400 N	AS 3706-4 1 sample per 5,000 m <sup>2</sup>

- CQA testing of the geotextile material will be in accordance with Table 8.

**Table 8: CQA testing for geotextile material**

Item	Property	Standard	Frequency
Conformance testing (upon shipment of geotextile to the premises)	Thickness	AS 2001-2.15	1 sample per 2,500 m <sup>2</sup>
	Mass per unit area	AS 2001-2.13	1 sample per 2,500 m <sup>2</sup>
	Wide stripe tensile strength	AS 3706-2	1 sample per 5,000 m <sup>2</sup>
	Tear strength	AS 3706-3	1 sample per 5,000 m <sup>2</sup>
	CBR burst strength	AS 3706-4	1 sample per 5,000 m <sup>2</sup>
Visual inspection of geotextile	Colour, thickness, tears, holes, punctures, needle punching, presence of needles or broken needles, and other faults in the material	-	Each roll during placement

## 5. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

### 5.1 Source-pathways and receptors

#### 5.1.1 Emissions and controls

The key emissions and associated actual or likely pathways during premises operation and construction of the extended capping layer which have been considered in this Amendment Report are detailed in Table 9 below. Table 9 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.



**Table 9: Licence Holder controls**

Emission	Potential pathways	Sources	Proposed controls
<b>Construction</b>			
Dust	Air/windborne pathway	Installation of additional capping layer to Cell 10 and 11: <ul style="list-style-type: none"> <li>– Clearing, grubbing and earthworks</li> <li>– Vehicle and machinery movements</li> </ul>	<ul style="list-style-type: none"> <li>- Dust suppression as required.</li> <li>- Slow vehicle speeds.</li> <li>- Designate haulage roads.</li> <li>- Weather monitoring to minimise dust generating activities during adverse conditions.</li> </ul>
Noise			<ul style="list-style-type: none"> <li>- Contingency measures to be implemented if complaints are received.</li> </ul>
Odour		Installation of additional capping layer to Cell 10 and 11: <ul style="list-style-type: none"> <li>– Trimming of existing soil cover to top of waste mass</li> </ul>	<ul style="list-style-type: none"> <li>- No re-shaping of the existing waste mass is required.</li> <li>- Minimal exposure of waste mass.</li> <li>- Minimum 300 mm of cover material to be applied over any exposed waste.</li> </ul>
<b>Operation</b>			
Leachate	Overland runoff and seepage to soils and groundwater	Extension of capping layer on landfill cells 10 and 11	<ul style="list-style-type: none"> <li>- CQA testing and inspections of synthetic capping materials.</li> <li>- Full coverage of a low permeability capping layer above the waste mass.</li> <li>- Reduced leachate generation resulting from the extended low permeability layer of the capping system.</li> <li>- Sloping of capping surface to prevent pooling of stormwater.</li> <li>- Boot sealing around service penetrations through the capping layer.</li> <li>- Shallow-rooted vegetation to prevent penetrations through low permeability barriers of the capping layer.</li> <li>- Monitoring and maintenance.</li> <li>- Groundwater monitoring.</li> </ul>
Spills / Contaminated stormwater	Overland runoff and seepage to soils and groundwater	Changes to Category 62 activities: <ul style="list-style-type: none"> <li>– Acceptance of up to 1,000 tonnes per annual period of E-waste, household and lithium batteries and lead-acid batteries</li> </ul>	<ul style="list-style-type: none"> <li>- Existing controls.</li> <li>- Increased rate of waste removal from the Premises.</li> </ul>



Emission	Potential pathways	Sources	Proposed controls
		Addition of Category 61: <ul style="list-style-type: none"> <li>- Acceptance of more than 100 tonnes per annual period of hazardous liquid waste</li> </ul>	
Dust	Air/windborne pathway	Final capped surface of landfill cells 10 and 11	<ul style="list-style-type: none"> <li>- Hydro-seeding of the upper capping layer to reduce wind erosion.</li> </ul>
Landfill gas	Air/windborne pathway	Extension of capping layer on landfill cells 10 and 11	<ul style="list-style-type: none"> <li>- CQA testing and inspections of synthetic liner materials.</li> <li>- Full coverage of a low permeability capping layer above the waste mass.</li> <li>- Boot sealing around service penetrations through the capping layer.</li> </ul>
Fire related emissions: <ul style="list-style-type: none"> <li>- Smoke and particulates</li> <li>- Fire embers</li> <li>- Fire washwater and associated contaminants</li> </ul>	Air/windborne pathway, overland runoff and seepage to soils and groundwater	Addition of Category 57: <ul style="list-style-type: none"> <li>- Storage of up to 250 used tyres at one time</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain no more than 100 tyres in a single stockpile</li> <li>- 3 m separation distance between stockpiles</li> </ul>
		Addition of Category 61: <ul style="list-style-type: none"> <li>- Acceptance of more than 100 tonnes per annual period of hazardous</li> </ul>	<ul style="list-style-type: none"> <li>- Increased frequency of removal offsite to maintain storage volumes at current levels</li> </ul>
		Changes to Category 61A activities: <ul style="list-style-type: none"> <li>- Increased acceptance of up to 10,000 tonnes of greenwaste per annual period</li> <li>- Reduction of greenwaste stockpile separation to 3 m</li> </ul>	<ul style="list-style-type: none"> <li>- Increased frequency of green waste removal offsite</li> <li>- 3 m stockpile height</li> </ul>
		Changes to Category 62 activities: <ul style="list-style-type: none"> <li>- Acceptance of up to 1,000 tonnes per annual period of E-waste, household and lithium batteries and lead-acid batteries</li> </ul>	<ul style="list-style-type: none"> <li>- Increased frequency of removal offsite to maintain storage volumes at current levels</li> </ul>

### 5.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020b), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 10 and Figure 1 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental siting* (DWER 2020a)).

**Table 10: Sensitive human and environmental receptors and distance from prescribed activity**

Receptors	Distance from prescribed activity
<b>Human receptors</b>	
<b>Sensitive receptor –</b> Rural residential homestead (RR1)	Approximately 660 m southwest of the Premises boundary
<b>Sensitive receptor –</b> Rural residential homestead (RR2)	Approximately 525 m south of the Premises boundary
<b>Sensitive receptor –</b> Rural residential homestead (RR3)	Approximately 680 m south of the Premises boundary
<b>Sensitive receptor –</b> Rural residential homestead (RR4)	Approximately 475 m south of the Premises boundary
<b>Sensitive receptor –</b> Rural residential homestead (RR5)	Approximately 425 m south of the Premises boundary
<b>Sensitive receptor –</b> Rural residential homestead (RR6)	Approximately 375 m south-southeast of the Premises boundary
<b>Sensitive receptor –</b> Residential development (RD1)	Approximately 430 m east of the Premises boundary
<b>Sensitive receptor –</b> Residential development (RD2)	Approximately 700 m south of the Premises boundary
<b>Sensitive receptor –</b> Rockingham Regional Memorial Park	Approximately 125 m east of the Premises boundary
<b>Environmental receptors</b>	
<b>Geomorphic wetland –</b> Kerosene Lane Swamp (conservation management category)	Approximately 560 m southwest of the Premises boundary
<b>Geomorphic wetland –</b> Cooloongup Lake (conservation management category)	Approximately 1.5 km west of the Premises boundary
<b>Geomorphic wetland –</b> Unnamed basin sumpland (conservation management category)	Approximately 380 m northwest of the Premises boundary

Receptors	Distance from prescribed activity
<b>Underlying groundwater –</b> Perth - Superficial Swan	<p>Regional information indicates that groundwater ranges from approximately 3 mAHD at the eastern boundary of the Premises to 2 mAHD at the western boundary. Depth to groundwater ranges between 25 mBGL to 3 mBGL depending on the extent of cut and fill activities across the Premises. Regional groundwater flows in a westerly direction towards Lake Coloongup.</p> <p>Monitoring during October 2021 encountered groundwater ranging between 5.056 mAHD to 1.9141 mAHD across the Premises. Local groundwater flow is inferred to be west-northwesterly.</p> <p>The closest downgradient abstraction bore is located approximately 250 m west of the Premises boundary in the BHP Billiton Nickel West Baldivis Tailings Storage Facility. The facility is a known contaminated site and groundwater abstraction is for treatment purposes.</p>
<b>Nature Reserve / Bush Forever Site –</b> Leda Nature Reserve / Bush Forever Site 349	Approximately 70 m north of the Premises boundary
<b>Bush Forever Site –</b> Bush Forever Site 356	Approximately 850 m east of the Premises boundary
<b>Threatened Ecological Community (TEC) / Priority Ecological Community (PEC) –</b> Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain (Critically Endangered [C'wth], Priority 3 [WA])	Approximately 70 m south of the capping works area

## 5.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 5.1. Where linkages are incomplete they have not been considered further in the risk assessment.

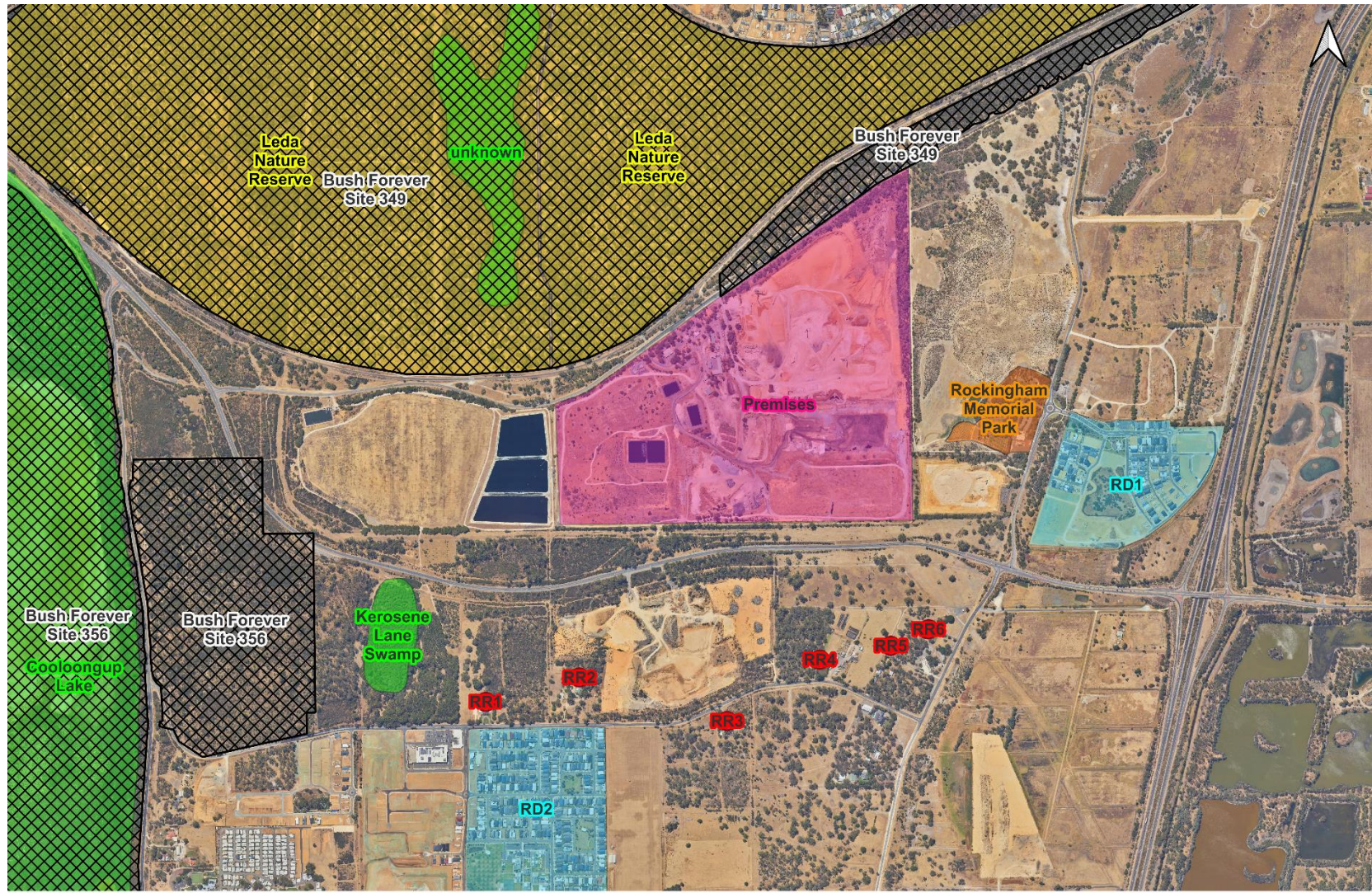
Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 5.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 11.

The Revised Licence L7064/1997/11 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. municipal waste acceptance, storage and landfilling activities.

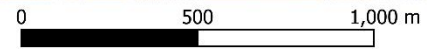
The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).





**Legend**

- Bush Forever Areas
- Rural residential homesteads
- Residential development
- Rockingham Memorial Park
- Premises boundary
- DBCA Legislated Tenure



**Figure 1: Receptors surrounding the Premises**

Licence: L7064/1997/11

IR-T15 Amendment report template v3.0 (May 2021)



Table 11. Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					Risk rating <sup>1</sup>	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls	C = consequence L = likelihood			
<b>Construction</b>								
Installation of additional capping layer to Cell 10 and 11: – Clearing, grubbing and earthworks – Vehicle and machinery movements	Dust	Air/windborne pathway causing impacts to health and amenity	Sensitive human receptors (refer to Table 10)	Refer to Section 5.1.1	C = Slight L = Unlikely <b>Low Risk</b>	Y	Condition 8: Table 5	No further regulatory controls are required due to the low risk rating of the risk event.
	Noise			Refer to Section 5.1.1	C = Slight L = Unlikely <b>Low Risk</b>	Y		No further regulatory controls are required due to the low risk rating of the risk event.
Installation of additional capping layer to Cell 10 and 11: – Trimming of existing soil cover to top of waste mass	Odour	Air/windborne pathway causing impacts to amenity		Refer to Section 5.1.1	C = Slight L = Possible <b>Low Risk</b>	Y		No further regulatory controls are required due to the low risk rating of the risk event.
<b>Operation</b>								
Final capped surface of landfill cells 10 and 11	Dust	Air/windborne pathway causing impacts to health and amenity	Sensitive human receptors (refer to Table 10)	Refer to Section 5.1.1	C = Slight L = Unlikely <b>Low Risk</b>	Y	Condition 8: Table 5	The risk event is considered unlikely due to vegetation of the capping surface providing protection against wind erosion once established. No further regulatory controls are required due to the low risk rating of the risk event.
Extension of capping layer on landfill cells 10 and 11	Landfill gas				Refer to Section 5.1.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	Condition 8: Table 5 Condition 26 Condition 27
	Leachate	Seepage through soil to groundwater causing impacts to groundwater quality	Underlying groundwater	Refer to Section 5.1.1				The extension of the capping layer is an improvement to the current leachate management of landfill cells 10 and 11. The extended capping will expand the surface barrier to rainfall infiltration through the waste mass, reducing the volume of leachate being generated in the cells. All pipeline or service protrusions will be sealed using bentonite so that preferential pathways are not formed.
Changes to Category 61A activities: – Increased acceptance of up to 10,000 tonnes of greenwaste per annual period	Leachate	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain Leda Nature Reserve Bush Forever Areas Geomorphic wetlands	Refer to Section 5.1.1	C = Minor L = Rare <b>Low Risk</b>	Y	Existing Condition – 4: Table 3 Row 5(b)	The existing Licence Holder control and regulatory condition requiring greenwaste to be stored on a compacted limestone hardstand is considered sufficient. No further regulatory controls are required due to the low risk rating of the risk event.
		Seepage through soil to groundwater causing impacts to groundwater quality	Underlying groundwater					

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions <sup>2</sup> of licence	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Changes to Category 62 activities: – Acceptance of up to 1,000 tonnes per annual period of E-waste, household and lithium batteries and lead-acid batteries  Addition of Category 61: – Acceptance of more than 100 tonnes per annual period of hazardous liquid waste	Spills / Contaminated stormwater	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain Leda Nature Reserve Bush Forever Areas Geomorphic wetlands	Refer to Section 5.1.1	C = Moderate L = Rare <b>Medium Risk</b>	Y	Condition 4: Table 3 Row 6	The Licence Holder's existing controls of impermeable, bunded storage areas and paint stillages are considered to be suitable controls for the risk event.  Due to the waste types not being treated or landfilled at the Premises, the Licence Holder is able to manage the increased volumes of waste received through increasing the frequency at which it's removed from the Premises.
		Seepage through soil to groundwater causing impacts to groundwater quality	Underlying groundwater	Refer to Section 5.1.1				
Addition of Category 57: – Storage of up to 250 used tyres at one time  Addition of Category 61: – Acceptance of more than 100 tonnes per annual period of hazardous liquid waste  Changes to Category 61A activities: – Increased acceptance of up to 10,000 tonnes of greenwaste per annual period – Reduction of greenwaste stockpile separation to 3 m  Changes to Category 62 activities: – Acceptance of up to 1,000 tonnes per annual period of E-waste, household and lithium batteries and lead-acid batteries	Smoke and particulates	Air/windborne pathway causing impacts to health and amenity	Sensitive human receptors (refer to Table 10)	Refer to Section 5.1.1	C = Major L = Unlikely <b>Medium Risk</b>	N	<b>Condition 4: Table 3 Row 3</b> <b>Condition 4: Table 3 Row 5(d)</b>	The Delegated Officer has considered the Licence Holder's proposed controls and determined that additional regulatory controls are required, due to the increased fuel loads proposed for storage on the Premises.  These additional regulatory controls will be targeted specifically to the storage of used tyres on the Premises. The requirements for tyre storage have been taken from the Department of Fire and Emergency Services (DFES) document <i>Guidance Note: GN02 Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres (2020)</i> .
	Fire embers	Air/windborne pathway causing bushfire and impact to terrestrial ecosystems	Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain Leda Nature Reserve Bush Forever Areas	Refer to Section 5.1.1	C = Major L = Unlikely <b>Medium Risk</b>	N	<b>Condition 4: Table 3 Row 3</b> <b>Condition 4: Table 3 Row 5(d)</b>	Additionally, the Delegated Officer has reviewed the DFES <i>Guideline GL-11: DFES Site Planning and Fire Appliance Specifications (2019)</i> . The guideline specifies access for a fire appliance requires a minimum width of 3.5 m. To ensure that sufficient access between greenwaste stockpiles is provided for DFES vehicles attending a fire event, the Delegated Officer will reduce the minimum separation distance to 3.5 m rather than the requested 3 m.
	Fire washwater and associated contaminants	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality	Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain Leda Nature Reserve Bush Forever Areas Geomorphic wetlands	Refer to Section 5.1.1	C = Major L = Unlikely <b>Medium Risk</b>	Y	Existing Conditions – 3 and 4	The Delegated Officer considers that the existing hardstands, bunded storage areas, stormwater and leachate management controls on the Premises are suitable for the proposed change to operations.
	Seepage through soil to groundwater causing impacts to groundwater quality	Underlying groundwater	Refer to Section 5.1.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y			

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments (DMER 2020)*.

Note 2: Proposed Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

## 6. Consultation

Table 12 provides a summary of the consultation undertaken by the department.

As the Licence Holder is the Local Government Authority (LGA), direct interest consultation with the LGA was not undertaken for this application.

**Table 12: Consultation**

Consultation method	Comments received	Department response
Licence Holder was provided with draft amendment on 8 February 2023	<p>The Licence Holder responded on 1 March 2023 with the comments below.</p> <p>Consideration for an amendment to the Timescales for 'Cells 10 and 11 Extended Capping Layer' in Table 5: Capping requirements (page 10) as follows;</p> <p>From: "Works must commence prior to July 2023"</p> <p>To: "Works must be completed prior to July 2024"</p> <p>The amendment is requested as due to the timeframes for tendering the works and liner delivery, commencement of the works prior to July 2023 would result in some of the works being undertaken during the winter period.</p> <p>Confirmation that they are satisfied with the proposed Licence Amendment subject to the above change.</p>	<p>The Delegated Officer notes that the intent of the timeframe was for the proposed works to be completed in a timely manner and outside of the winter period. The proposed amendment to the condition is considered reasonable.</p>

## 7. Conclusion

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

The proposed extension to the capping layer on landfill cells 10 and 11 is not considered to increase the risk profile for emissions and discharges from the Premises. The extended capping is an improvement to existing controls for the landfill cells and the Licence Holder is proposing to implement sufficient quality controls for the installation.

The Delegated Officer considers that additional controls are required in relation to managing the increased storage volumes of waste tyres on the Premises. These controls have been sourced from *Guidance Note: GN02 Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres* (DFES 2020).

The proposed reduction in green waste stockpile separation distances to 3 m is not considered suitable, as existing guidance (DFES 2019) states that a minimum of 3.5 m is required for DFES vehicle access in the event of fire. The Delegated Officer has resolved to partially implement the proposed separation distance reduction by amending the existing distance to 3.5 m.

The remaining proposed changes to waste acceptance and storage activities are considered acceptable, provided that the Licence Holder's proposed and existing controls are implemented at the Premises.

## 7.1 Summary of amendments

### 7.1.1 Material amendments

Table 13 provides a summary of the proposed amendments that make a material change to the Licence Holder's requirements and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

**Table 13: Summary of licence amendments**

Condition no.	Proposed amendments
<p><u>Existing</u> Schedule 2</p> <p><u>Revised</u> Front page</p>	<p><i>Category 57: Used tyre storage (general) was added with a design capacity of up to 250 used tyres at one time.</i></p> <p><i>Category 61: Liquid waste facility was added with a design capacity of 1,000 tonnes per annual period.</i></p> <p>The design capacity for Category 61A: Solid waste facility was amended from 7,000 tonnes per annual period to 10,000 tonnes per annual period.</p> <p>Changes to formatting are discussed in the consolidation section below (Table 14).</p>
<p><u>Existing</u> 1.2.3: Table 1.2.3</p> <p><u>Revised</u> 1: Table 1</p>	<p>The acceptance specification for Inert Waste Type 2 was changed from <i>No more than 100 tyre units stored on the premises</i> to <i>No more than 250 tyre units shall be accepted onto the premises at any one time.</i></p> <p>The rate at which waste is received for green waste was changed from 7,000 tonnes per annual period to 10,000 tonnes per annual period.</p> <p>The rate at which waste is received for Hazardous waste was changed from <i>Up to 99 tonnes per annual period</i> to <i>Combined total of 1,000 tonnes per annual period.</i></p> <p>The acceptance specification was amended from <i>Limited to paints and resins, waste oils, and household hazardous wastes</i> to <i>Limited to household batteries, lithium batteries and lead-acid batteries, paints and resins, waste oils, and household hazardous wastes.</i></p> <p><i>Hazardous waste</i> was amended to <i>Solid hazardous waste, E-waste and liquid hazardous waste.</i></p> <p>Changes to formatting are discussed in the consolidation section below (Table 14).</p>
<p><u>Existing</u> N/A</p> <p><u>Revised</u> 3: Table 2 Row 6(a)</p>	<p>The following operational requirement for the groundwater monitoring bore network was added:</p> <p><i>Must be maintained free from blockages and in good working order to allow representative groundwater samples to be taken.</i></p>
<p><u>Existing</u> N/A</p> <p><u>Revised</u> 4: Table 3 Row 3</p>	<p>The following process limits and/or specifications relating to storage of used tyres were added:</p> <p><i>No more than 250 tyres shall be stored at the premises at any one time;</i></p> <p><i>Tyres must be stored in the following arrangement:</i></p> <ul style="list-style-type: none"> <li><i>(i) Stacked on their side or in the laced storage format depicted in Figure 3;</i></li> <li><i>(ii) Within Tyre Stacks that do not exceed 3.7 m in height and 60 m<sup>2</sup> in area (Figure 4);</i></li> <li><i>(iii) Within Tyre Piles that contain a maximum of 4 Tyre Stacks with a minimum separation distance of 2.5 m between each stack (Figure 5); and</i></li> <li><i>(iv) A minimum separation distance of 18 m must be maintained between each Tyre Pile (Figure 6).</i></li> </ul>



Condition no.	Proposed amendments						
<p><u>Existing</u> 1.2.5: Table 1.2.4 (Hazardous waste)</p> <p><u>Revised</u> 4: Table 3 Row 6</p>	<p>Hazardous waste was amended to <i>Solid hazardous waste, E-waste and liquid hazardous waste</i>.</p> <p>The following process limits and/or specifications relating to solid hazardous waste and liquid hazardous waste was added:</p> <p style="text-align: center;"><i>Must not be landfilled at the premises</i></p> <p>Changes to formatting are discussed in the consolidation section below (Table 14).</p>						
<p><u>Existing</u> 1.2.5: Table 1.2.4 (Special Waste Type 3)</p> <p><u>Revised</u> 4: Table 3 Row 9(a)</p>	<p>The process limits and/or specifications was amended from <i>Must only be disposed of into a designated disposal area within the landfill (cells 16 and 17)</i> to <i>Must only be disposed of into a designated disposal area within the active Class III Landfill Cells</i>.</p> <p>Changes to formatting are discussed in the consolidation section below (Table 14).</p>						
<p><u>Existing</u> N/A</p> <p><u>Revised</u> 8: Table 5</p>	<p>The following requirements relating to construction of the extended capping layer of landfill cells 10 and 11 were added to Table 5:</p> <table border="1" data-bbox="435 862 1396 1440"> <thead> <tr> <th data-bbox="435 862 624 913">Cell Numbers</th> <th data-bbox="624 862 1198 913">Specification</th> <th data-bbox="1198 862 1396 913">Timescales</th> </tr> </thead> <tbody> <tr> <td data-bbox="435 913 624 1440"> <p>Cells 10 and 11 Extended Capping Layer</p> </td> <td data-bbox="624 913 1198 1440"> <p><i>Complete extension of the capping layer over the southern and eastern slopes of Cell 10 and the southern slope of Cell 11 in accordance with the following documents:</i></p> <ul style="list-style-type: none"> <li>• <i>Cell 10 and 11 Capping Drawings;</i></li> <li>• <i>Construction of Landfill Cell 10 &amp; 11 Capping at the Millar Road Landfill Facility, Baldivis; and</i></li> <li>• <i>Millar Road Landfill: Landfill Capping Construction Activities Construction Quality Assurance Plan (July 2020).</i></li> </ul> <p><i>The capping layer must comprise:</i></p> <ul style="list-style-type: none"> <li>• <i>Soil cover layer over the waste mass;</i></li> <li>• <i>Coated GCL synthetic liner;</i></li> <li>• <i>Cushion geotextile;</i></li> <li>• <i>Sand drainage layer;</i></li> <li>• <i>Soil growing medium; and</i></li> <li>• <i>Revegetated final cap surface.</i></li> </ul> </td> <td data-bbox="1198 913 1396 1440"> <p><i>Works must be completed prior to July 2024</i></p> </td> </tr> </tbody> </table>	Cell Numbers	Specification	Timescales	<p>Cells 10 and 11 Extended Capping Layer</p>	<p><i>Complete extension of the capping layer over the southern and eastern slopes of Cell 10 and the southern slope of Cell 11 in accordance with the following documents:</i></p> <ul style="list-style-type: none"> <li>• <i>Cell 10 and 11 Capping Drawings;</i></li> <li>• <i>Construction of Landfill Cell 10 &amp; 11 Capping at the Millar Road Landfill Facility, Baldivis; and</i></li> <li>• <i>Millar Road Landfill: Landfill Capping Construction Activities Construction Quality Assurance Plan (July 2020).</i></li> </ul> <p><i>The capping layer must comprise:</i></p> <ul style="list-style-type: none"> <li>• <i>Soil cover layer over the waste mass;</i></li> <li>• <i>Coated GCL synthetic liner;</i></li> <li>• <i>Cushion geotextile;</i></li> <li>• <i>Sand drainage layer;</i></li> <li>• <i>Soil growing medium; and</i></li> <li>• <i>Revegetated final cap surface.</i></li> </ul>	<p><i>Works must be completed prior to July 2024</i></p>
Cell Numbers	Specification	Timescales					
<p>Cells 10 and 11 Extended Capping Layer</p>	<p><i>Complete extension of the capping layer over the southern and eastern slopes of Cell 10 and the southern slope of Cell 11 in accordance with the following documents:</i></p> <ul style="list-style-type: none"> <li>• <i>Cell 10 and 11 Capping Drawings;</i></li> <li>• <i>Construction of Landfill Cell 10 &amp; 11 Capping at the Millar Road Landfill Facility, Baldivis; and</i></li> <li>• <i>Millar Road Landfill: Landfill Capping Construction Activities Construction Quality Assurance Plan (July 2020).</i></li> </ul> <p><i>The capping layer must comprise:</i></p> <ul style="list-style-type: none"> <li>• <i>Soil cover layer over the waste mass;</i></li> <li>• <i>Coated GCL synthetic liner;</i></li> <li>• <i>Cushion geotextile;</i></li> <li>• <i>Sand drainage layer;</i></li> <li>• <i>Soil growing medium; and</i></li> <li>• <i>Revegetated final cap surface.</i></li> </ul>	<p><i>Works must be completed prior to July 2024</i></p>					
<p><u>Existing</u> 2.3.2: Table 2.3.1</p> <p><u>Revised</u> 16: Table 7</p>	<p>The monitoring location was amended from <i>Leachate 1, Leachate 2, Leachate 3 to Each leachate pond</i>.</p> <p>Changes to formatting are discussed in the consolidation section below (Table 14).</p>						
<p><u>Existing</u> 3.1.2</p> <p><u>Revised</u> 23</p>	<p>The submission date for the Annual Audit Compliance Report was amended from <i>91 calendar days to 30 September</i>.</p> <p>Changes to formatting are discussed in the consolidation section below (Table 14).</p>						
<p><u>Existing</u> 3.2.1: Table 3.2.1</p> <p><u>Revised</u> 24</p>	<p>The submission date for the Annual Environmental Report was amended from <i>91 calendar days to 30 September</i>.</p> <p>The Annual Environmental Report information requirements for leachate and groundwater monitoring were amended to include current DWER expectations for information reporting:</p>						

Condition no.	Proposed amendments			
	<table border="1"> <thead> <tr> <th data-bbox="432 259 579 315">Condition or table</th> <th data-bbox="579 259 1396 315">Requirement</th> </tr> </thead> </table>	Condition or table	Requirement	
Condition or table	Requirement			
	16	<p>Summary of the process monitoring results that includes:</p> <ul style="list-style-type: none"> <li>(a) a clear statement of the scope of work carried out;</li> <li>(b) a description of the field methodologies employed;</li> <li>(c) a tabulated summary of results, as well as all raw data provided in an accompanying Microsoft Excel spreadsheet digital document/file (or a compatible equivalent digital document/file), with all results being clearly referenced to laboratory certificates of analysis;</li> <li>(d) a diagram with aerial image overlay showing all monitoring locations; and</li> <li>(e) an interpretive summary and assessment of results against previous monitoring results.</li> </ul>		
	17	<p>Summary of the ambient groundwater quality monitoring results that includes:</p> <ul style="list-style-type: none"> <li>(a) a clear statement of the scope of work carried out;</li> <li>(b) a description of the field methodologies employed;</li> <li>(c) a summary of the field and laboratory quality assurance / quality control (QA/QC) program;</li> <li>(d) copies of the field monitoring records and field QA/QC documentation;</li> <li>(e) an assessment of reliability of field procedures and laboratory results;</li> <li>(f) a tabulated summary of results, as well as all raw data provided in an accompanying Microsoft Excel spreadsheet digital document/file (or a compatible equivalent digital document/file), with all results being clearly referenced to laboratory certificates of analysis;</li> <li>(g) a diagram with aerial image overlay showing all monitoring locations and depicting groundwater level contours, flow direction and hydraulic gradient (relevant site features including discharge points and other potential sources of contamination must also be shown);</li> <li>(h) an interpretive summary and assessment of the results against relevant assessment levels for water, as published in the Guideline Assessment and management of contaminated sites;</li> <li>(i) an interpretive summary and assessment of results against previous monitoring results; and</li> <li>(j) trend graphs to provide a graphical representation of historical results and to support the interpretive summary.</li> </ul>		
	<p>With the exception of submitting raw data in an accompanying digital spreadsheet, the Licence Holder is already meeting these reporting requirements in their recent AER submissions.</p> <p>Changes to formatting are discussed in the consolidation section below (Table 14).</p>			
<p><u>Existing</u> N/A <u>Revised</u> 26</p>	<p>The following reporting condition for validating compliance of the Cell 10 and 11 Extended Capping Layer installation was added:</p> <p><i>The licence holder must within 30 calendar days of the Cell 10 and 11 Extended Capping Layer required by condition 8 being constructed and/or installed:</i></p> <ul style="list-style-type: none"> <li>(a) undertake an audit of their compliance with the requirements of condition 8; and</li> <li>(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance.</li> </ul>			
<p><u>Existing</u> N/A <u>Revised</u> 27</p>	<p>The following condition listing the information requirements for the Cell 10 and 11 Extended Capping Layer Environmental Compliance Report was added:</p> <p><i>The Environmental Compliance Report required by condition 26, must include as a minimum the following:</i></p> <ul style="list-style-type: none"> <li>(a) certification by a suitably qualified engineer that the Cell 10 and 11 Extended Capping Layer, as specified in condition 8, has been constructed in accordance with the relevant requirements specified in</li> </ul>			

Condition no.	Proposed amendments						
	<p>condition 8;</p> <p>(b) provide evidence to demonstrate that all the relevant requirements specified in condition 8 and the Millar Road Landfill Landfill Capping Construction Activities Construction Quality Assurance Plan (July 2020) have been complied with;</p> <p>(c) an as-constructed version of the Cell 10 &amp; 11 Capping Layout (MILL-300) engineering drawing; and</p> <p>(d) be signed by a person authorised to represent the works approval holder and contains the printed name and position of that person.</p>						
<p><u>Existing</u></p> <p>1.1.2</p> <p><u>Revised</u></p> <p>Definitions: Table 11</p>	<p>The following amendments to definitions were made:</p> <table border="1"> <thead> <tr> <th>Term</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>annual period</td> <td>a 12 month period commencing from 1 July until 30 June of the immediately following year.</td> </tr> <tr> <td>Cell 10 and 11 Capping Drawings</td> <td> <p>means the following series of engineering drawings for the Millar Road Landfill Facility:</p> <ul style="list-style-type: none"> <li>– Cell 10 &amp; 11 Capping Layout (MILL-300);</li> <li>– Proposed Cell 10 &amp; 11 Capping Typical Sections - Sheet 1 of 2 (MILL-301);</li> <li>– Proposed Cell 10 &amp; 11 Capping Typical Sections - Sheet 2 of 2 (MILL-302); and</li> <li>– Leachate Sump Penetration Detail (MILL-303).</li> </ul> </td> </tr> </tbody> </table> <p>Changes to formatting are discussed in the consolidation section below (Table 14).</p>	Term	Definition	annual period	a 12 month period commencing from 1 July until 30 June of the immediately following year.	Cell 10 and 11 Capping Drawings	<p>means the following series of engineering drawings for the Millar Road Landfill Facility:</p> <ul style="list-style-type: none"> <li>– Cell 10 &amp; 11 Capping Layout (MILL-300);</li> <li>– Proposed Cell 10 &amp; 11 Capping Typical Sections - Sheet 1 of 2 (MILL-301);</li> <li>– Proposed Cell 10 &amp; 11 Capping Typical Sections - Sheet 2 of 2 (MILL-302); and</li> <li>– Leachate Sump Penetration Detail (MILL-303).</li> </ul>
Term	Definition						
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<p><u>Existing</u></p> <p>Schedule 1</p> <p><u>Revised</u></p> <p>Schedule 1</p>	<p>Figures 1 and 2 were replaced with updated figures provided by the Licence Holder.</p>						
<p><u>Existing</u></p> <p>N/A</p> <p><u>Revised</u></p> <p>Schedule 2</p>	<p>The premises boundary was defined using GDA2020 MGA Zone 50 coordinates.</p>						
<p><u>Existing</u></p> <p>N/A</p> <p><u>Revised</u></p> <p>Schedule 4</p>	<p>Figures showing the arrangement and minimum separation distances for tyre storage were added.</p>						

### 7.1.2 Conversion of Existing Licence

Table 14 provides a summary of the administrative amendments and conversion of licence conditions to the current licensing format that are not considered to make a material change to the Licence Holder's requirements. Table 14 will act as record of implemented changes and guide to the conversion.

**Table 14: Conversion of licence conditions in this amendment**

Existing condition	Condition summary	Revised licence condition	Conversion notes
Content and introduction	Introduction and preamble description of the premises	N/A	Removed from licence due to current licensing format not containing this information.
1.1.1	Interpretation	Interpretation section	Redundant condition. Revised to current licensing format.
1.1.2	Definitions	Table 11	Revised to current licensing format.
1.1.3	Australian or other standard	Interpretation section	Redundant condition. Revised to current licensing format.
1.1.4	Reference to code of practice	Interpretation section	Redundant condition. Revised to current licensing format.
1.2.1 and Table 1.2.1	Disposal of waste in landfill infrastructure	4 and Table 3	Revised to current licensing format.
	Infrastructure requirements	3 and Table 2	
1.2.2 and Table 1.2.2	Containment infrastructure	3 and Table 2	Revised to current licensing format.
1.2.3 and Table 1.2.3	Waste acceptance	1 and Table 1	Revised to current licensing format.
1.2.4	Non-conforming waste	2	Revised to current licensing format. As soon as practicable term changed to within 7 calendar days.
1.2.5 and Table 1.2.4	Waste processing	4 and Table 3	Revised to current licensing format. Process limits that were more related to operational requirements for infrastructure were moved to the infrastructure and equipment table (Condition 3 Table 2).
1.2.6 (a)	Size of tipping face	4 and Table 3	Revised to current licensing format and moved to waste processing table as process limit for landfilling.
1.2.6 (b)	Stability of waste	3 and Table 2	Revised to current licensing format and moved to infrastructure table as an operational requirement for the landfill cells.
1.2.6 (c)	Covering of waste	N/A	Redundant condition removed. Duplicates other condition of the licence (Condition 5 Table 4).
1.2.6 (d)(e)	Cell boundary separation and rehabilitation	3 and Table 2	Revised to current licensing format and moved to infrastructure table as an operational requirement for the landfill cells.

Existing condition	Condition summary	Revised licence condition	Conversion notes
1.2.7 and Table 1.2.5	Landfill cover requirements	5 and Table 4	Revised to current licensing format. As soon as practicable terms removed where a maximum timeframe was not defined.
1.2.8 and Table 1.2.6	Leachate pond freeboard	N/A	Redundant condition removed. Duplicates other condition of the licence (Condition 3 Table 2).
1.2.9	Inspection and notification of leachate system blockage	6	Revised to current licensing format.
1.2.10	Timeframe for removal of leachate in the event of a blockage	7	Revised to current licensing format.
1.2.11 and Table 1.2.7	Capping requirements	8 and Table 5	Revised to current licensing format.
1.2.12	Collection and control of landfill gas	3 and Table 2	Revised to current licensing format and moved to infrastructure table.
1.2.13	Stormwater ponding	9	Revised to current licensing format.
1.2.14	Fencing and security	3 and Table 2	Revised to current licensing format and moved to infrastructure table.
1.2.15	No burning of waste	12	Revised to current licensing format.
1.2.16	Entry signage	3 and Table 2	Revised to current licensing format and moved to infrastructure table.
1.2.17	Windblown waste control	10	Revised to current licensing format.
1.2.18	Pest control	11	Revised to current licensing format.
1.3.1 and Table 1.3.1	Rehabilitation and Post-Closure Management Plan	N/A	Removed from licence as the plan has already been submitted (DWERDT247645) and acknowledged (A1077956).
2.1.1 (a)	Water sample methodology	16 and Table 7	Revised to current licensing format and included in monitoring table.
2.1.1 (b)	Groundwater sample methodology	17 and Table 8	Revised to current licensing format and included in monitoring table.
2.1.1 (c)	NATA accreditation	18	Revised to current licensing format.
2.1.2	Monitoring interregnum	13	Revised to current licensing format.
2.1.3	Calibration of monitoring equipment	14	Revised to current licensing format.
2.1.4	Calibration method reporting	N/A	Redundant condition removed.

<b>Existing condition</b>	<b>Condition summary</b>	<b>Revised licence condition</b>	<b>Conversion notes</b>
2.2.1 and Table 2.2.1	Monitoring inputs and outputs	15 and Table 6	Revised to current licensing format.
2.3.2 and Table 2.3.1	Leachate monitoring	16 and Table 7	Revised to current licensing format. Errors in parameter descriptions corrected.
2.4.1 and Table 2.4.1	Groundwater monitoring	17 and Table 8	Revised to current licensing format. Errors in parameter descriptions corrected.
3.1.1	Records	21 and 22	Revised to current licensing format.
3.1.2	Annual Audit Compliance Report (AACR)	23	Revised to current licensing format.
3.1.3	Complaints management	19	Revised to current licensing format.
3.1.4	Special Waste Type 1 and 2 register	20	Revised to current licensing format.
3.2.1 and Table 3.2.1	Annual Environmental Report (AER)	24 and Table 9	Revised to current licensing format.
3.2.2	Assessment of AER information	Table 9	Revised to current licensing format and moved to AER requirements table.
3.2.3	AER submitted according to specifications	N/A	Redundant condition removed due to changed licensing format.
3.3.1 and Table 3.31	Notification requirements	25 and Table 10	Revised to current licensing format and notification requirements for unauthorised fires updated to DWER Pollution Watch Hotline.
Schedule 2	Prescribed Premises Category table	Front page	Revised to current licensing format. Moved to table at the front of the licence.

## References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Fire and Emergency Services (DFES) 2019, *Guideline GL-11: DFES Site Planning and Fire Appliance Specifications*, Perth, Western Australia.
3. DFES 2020, *Guidance Note: GN02 Bulk Storage of Rubber Tyres Including Shredded and Crumbed Tyres*, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Environmental Siting*, Perth, Western Australia.
5. DWER 2020b, *Guideline: Risk Assessments*, Perth, Western Australia.
6. Environmental Protection Authority Victoria (EPAV) 2015, 788.3: *Siting, design, operation and rehabilitation of landfills*, Carlton, Victoria.

## Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY				
Application type				
Works approval	<input type="checkbox"/>			
Licence	<input type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>
		Has the works approval been complied with?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Has time limited operations under the works approval demonstrated acceptable operations?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Date Report received:		
Renewal	<input type="checkbox"/>	Current licence number:		
Amendment to works approval	<input type="checkbox"/>	Current works approval number:		
Amendment to licence	<input checked="" type="checkbox"/>	Current licence number:	L7064/1997/11	
		Relevant works approval number:		N/A <input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:		None <input type="checkbox"/>
Date application received	30 September 2022			
Applicant and Premises details				
Applicant name/s (full legal name/s)	City of Rockingham			
Premises name	Millar Road Landfill Facility			
Premises location	Lot 2170 on Plan 211650, Millar Road, BALDIVIS			
Local Government Authority	City of Rockingham			
Application documents				
HPCM file reference number:	DWERDT667245			
Key application documents (additional to application form):	Landfill checklist Application supporting document <ul style="list-style-type: none"> <li>• Appendix No. 1 - Millar Road Landfill Facility Rehabilitation and Post-Closure Plan – November 2015 – Issued 1 December 2015, Draft</li> <li>• Appendix No. 2 - Cell 10 &amp; 11 Capping Drawings</li> <li>• Appendix No. 3 - Cell 10 &amp; 11 Capping Specification</li> <li>• Appendix No. 4 - Cell 10 &amp; 11 Capping CQA Plan</li> <li>• Appendix No. 5 - Cell 8 &amp; 10 Stability Statement WML 5 March 2020</li> <li>• Appendix No. 6 - Premises Map</li> <li>• Appendix No. 7 - Map of Site Features</li> </ul>			
Scope of application/assessment				



Summary of proposed activities or changes to existing operations.

**Licence amendment**

Application to extend the landfill capping layer over the south and eastern slopes of Cell 10 and the southern slope of Cell 11. Investigations into leachate popouts occurring following high rainfall in 2021 concluded that the previous capping of Cell 10 and 11 did not completely cover the area occupied by the basal landfill liner at the above slope areas. The application is proposing to address this by installing additional capping in accordance with the previous design. The additional capping will extend 2m over the existing capping liner and 5m beyond the extent of the basal liner.

The application also requests the following additional amendments:

- Page 3 – Premises Description and Licence Summary, second paragraph – Remove the reference to 390,000 tonnes per annum;
- Page 3 – Premises Description and Licence Summary, third paragraph – amend the text to “Initial construction of the landfill began in 1993 with the facility opening that same year. Since then multiple cells have been commissioned. All cells have been constructed with either compacted low permeability clay or geosynthetic composite lining and capping systems with leachate collection systems and evaporation ponds”;
- Page 3 and 4 – Premises Description and Licence Summary, last paragraph– delete “AGL Energy” and replace with “LMS Energy”, as LMS has recently taken over the management of landfill gas on site;
- Page 4 – Premises Description and Licence Summary, last paragraph – delete “2035” and replace with “2055”, as, due to the imminent opening of the two Waste to Energy facilities in the southern metropolitan area, there is anticipated to be a reduction in annual landfill tonnage; consequently, the landfill is anticipated to last longer;
- Page 6 - Section 1.1 Interpretation – Change the Annual Period from 1 January to 31 December to 1 July to 30 June;
- Page 12 – Table 1.2.4 – Special Waste Type 3 – amend to remove the reference to Cell 16 and 17 to be less specific so that the condition will be applicable as future landfill cells are constructed;
- Page 13 – Condition 1.2.9 – correction of error - delete “Schedule 2, Part A” and replace with “Schedule 3”;
- Page 14 – Condition 1.3.1 – correction of error - The reference to “Table 1.4.1” should be “Table 1.3.1”.
- Page 16 – Condition 2.3.2 – correction of error - delete “2.3.2” and replace with “2.3.1”;
- Page 16 – Table 2.3.1 – Monitoring Point Reference – delete the reference to “Leachate Pond 2”, as this pond has been removed and add the reference to “Leachate Ponds 4A/4B”, as these have recently been constructed;
- Page 16 – Table 2.3.1 – delete “(total)” after Arsenic. Total in relation to metals analysis means unfiltered samples, previous DWER advise was that this was intended to mean that Arsenic is not speciated into As(III) and As(V).
- Page 16 – Table 2.3.1 – delete “methylbenzene” and replace with “ethylbenzene” and delete “ben(a)pyrene” and replace with “benzo(a)pyrene”, these being the correct descriptions from these parameters;
- Schedule 1 – Replace Premises Map and Map of Site Features with updated maps (Appendix No. 6 – Premises Map and Appendix No. 7 – Map of Site);
- Page 10, Table 1.2.3: Waste Acceptance - Inert Waste Type 2 - Increase tyre storage allowance from 100 to 250 tyres;
- Increase greenwaste allowance from 7,000 tpa to 10,000 tpa;
- Increase Hazardous Wastes throughput from 99 tpa to 1,000 tpa;
- Decrease spacing between greenwaste stockpiles from 5 m to 3 m; and
- Allow temporary storage of leachate in depressions on the landfill surface.

**Category number/s (activities that cause the premises to become prescribed premises)**

**Table 1: Prescribed premises categories**

Prescribed premises category and description	Assessed / proposed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 61A: Solid waste facility	Assessed – 7,000 tpa	Increase to 10,000 tpa
Category 62: Solid waste depot	Assessed – 50,000 tpa	No change
Category 64: Class II or III putrescible landfill site	Assessed – 450,000 tpa	No change
Category 57: Used tyre storage (general)	Proposed – 250 tyres at one time	New category added. Addition of category is not proposed in the application but will be required to increase tyre storage above existing licence limit of 100

**Legislative context and other approvals**

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: 271 EPA Report No: 596
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	If N/A explain why? Previously demonstrated
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	If N/A explain why? Public works undertaken by a local government
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	CPS No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: Licence/permit No: Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Type: N/A Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office: Kwinana Peel

Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to <a href="#">WQPN 25</a> )? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i> )	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Environmental Protection (Controlled Waste) Regulations 2004 <i>Dangerous Goods Safety Act 2004</i>
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Classification: possibly contaminated – investigation required (PC-IR) Date of classification: 19 July 2017
<b>Direct interest stakeholders</b>		
Internal – Referral to EPA Services	Letter to be sent Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>CATEGORY SPECIFIC CHECKLIST – SOLID WASTE LANDFILLS</b>		
<b>Part 1: Environmental siting and conceptual site model (CSM)</b>		
<b>1.1 Siting context and background</b> Provide a description of: <ul style="list-style-type: none"> <li>history of the site (past and current activities)</li> <li>land ownership</li> <li>the local area and the landfill's siting within this area</li> <li>surrounding land uses</li> <li>community and/or stakeholder need for landfill site.</li> </ul>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Document reference:</b> Application supporting document <b>Sufficient:</b> Yes
<b>1.2 Sensitive receptors and designated areas (within a 2 km radius<sup>1</sup>)</b> Provide information on the distance and directions to sensitive environmental and human receptors including: <ul style="list-style-type: none"> <li>human receptors (e.g. residential, rural, industrial / commercial, and/or recreational premises)</li> <li>surface waters (permanent and seasonal)</li> <li>depth to groundwater and potential beneficial use(s)</li> <li>sensitive flora and fauna</li> <li>designated areas<sup>2</sup></li> <li>regional and local catchment characteristics.</li> </ul> And other sensitive receptors as identified in the <a href="#">Guideline: Environmental siting</a> .	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Document reference:</b> Application supporting document <b>Sufficient:</b> Yes
<b>1.3 Local climate and meteorological data</b> Provide information on the local climate and meteorological data, including: <ul style="list-style-type: none"> <li>monthly rainfall</li> <li>monthly evaporation</li> <li>wind conditions (seasonal wind strength and direction)</li> </ul>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<b>Document reference:</b> N/A <b>Sufficient:</b> Yes – Scope of amendment application is for capping

	<ul style="list-style-type: none"> <li>source and date range of meteorological data (e.g. on-site weather station or from a Bureau of Meteorology [BoM] site; site details must be provided).</li> </ul>		
1.4	<p><b>Topography, geology and hydrology</b></p> <p>Provide information on the topography, geology and hydrogeology of the area including:</p> <ul style="list-style-type: none"> <li>surface elevation and topography</li> <li>regional and local geology<sup>3</sup> and soils<sup>3</sup> including site-specific soil and geological records where available</li> <li>regional and local hydrology</li> <li>groundwater flow direction and rate<sup>3</sup></li> <li>groundwater quality<sup>3</sup> and current or future use</li> <li>groundwater aquifer characteristics</li> <li>a description of geologic active processes (e.g. faulting, subsidence) (if applicable).</li> </ul>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<p><b>Document reference:</b></p> <p>N/A</p> <p><b>Sufficient:</b> Yes – Scope of amendment application is for capping</p>
1.5	<p><b>Conceptual site model</b></p> <p>Provide a site-specific conceptual site model (CSM)<sup>4</sup> which clearly identifies all potential source-pathway-receptor (S-P-R) linkages for all related environmental media (Section 1.8 below – Attachment 3).</p>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<p><b>Document reference:</b></p> <p>N/A</p> <p><b>Sufficient:</b> Yes – Scope of amendment application is for capping</p>
<b>Attachments</b>			
1.6	<p><b>Attachment 1: Locality map(s)</b></p> <p>An aerial photograph, map, and/or site plan of sufficient scale showing the proposed prescribed premises boundary and general locality of the premises in respect to nearby sensitive receptors and surrounding land uses.</p> <p>Multiple maps at different scales can be provided.</p>	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<p><b>If N/A why:</b></p> <p>Previously provided</p>
1.7	<p><b>Attachment 2: Topography, geology and hydrogeological plans/maps</b></p> <p>An aerial overview and cross-section drawings of topographical, geological, and hydrogeological features related to the site.</p>	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<p><b>If N/A why:</b></p> <p>Previously provided</p>
1.8	<p><b>Attachment 3: Conceptual site model</b></p> <p>In accordance with Part 1.5 above, provide a CSM in table format. A graphical representation can also be developed and submitted to help illustrate S-P-R linkages. An example table format is provided below.</p>	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<p><b>If N/A why:</b></p> <p>Previously provided</p>
<b>Part 2A: Design overview and construction works</b>			
2.1	<p><b>Landfill design concept</b></p> <p>Provide information on each component of the proposed landfill including (but not limited to):</p> <ul style="list-style-type: none"> <li>landfill type and design concept: including details on size (spatial and volumetric), lifespan, geometry, proposed liner<sup>5</sup> and leachate management system<sup>5</sup> and groundwater and surface water management<sup>5</sup> (specified design detail must be provided for each proposed landfill cell)</li> <li>waste types proposed for disposal<sup>6</sup></li> <li>details on the landfill cell(s) that will be subject of this application and staging of development</li> <li>site infrastructure layout including details on traffic access and internal haul routes, and details on all facilities for receiving and handling waste and administration of the landfill.</li> </ul>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<p><b>Document reference:</b></p> <p>Application supporting document and appendices</p> <p><b>Sufficient:</b> Yes</p>
2.2	<p><b>Scope of construction works</b></p> <p>Provide details of construction works including:</p> <ul style="list-style-type: none"> <li>general site preparation works<sup>7,8</sup></li> </ul>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<p><b>Document reference:</b></p> <p>Application supporting document and appendices</p>

<ul style="list-style-type: none"> <li>• infrastructure to be constructed</li> <li>• construction phases and associated timings of works</li> <li>• construction quality assurance (CQA) measures and procedures to be employed<sup>9</sup></li> <li>• summary of management measures and controls to be adopted for noise, dust and odour emissions (odour in the case where new cells are tying in with existing cells) and for the management of stormwater, general erosion and sediment control<sup>10</sup></li> </ul>		<b>Sufficient:</b> Yes
<b>Attachments</b>		
<p>2.3 <b>Attachment 4: Premises map and site layout plan(s)</b></p> <p>A premises map and site layout plan must be provided, which include the following:</p> <ul style="list-style-type: none"> <li>• premises boundary</li> <li>• site layout depicting all infrastructure (current and proposed)</li> <li>• location of the works (cells, leachate ponds, etc.) and any potential future cells/ponds (as applicable)</li> <li>• stormwater infrastructure</li> <li>• access and haulage roads</li> <li>• other key buildings (gatehouse, weighbridge, administration office, etc.)</li> <li>• scale and north arrow; GPS coordinates and legend.</li> </ul>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	<b>Document reference:</b> Application supporting document Appendix 6 and 7
<p>2.4 <b>Attachment 5: Detailed design drawings (multiple as required)</b></p> <p>Detailed design drawings:<sup>11</sup></p> <ul style="list-style-type: none"> <li>• cell layout</li> <li>• landfill geometry</li> <li>• schematic cross sections of the landfill cell(s)</li> <li>• leachate pond layout and cross sections</li> <li>• landfill cap.</li> </ul>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	<b>Document reference:</b> Application supporting document Appendix No. 2 – Cell 10 & 11 Capping Drawings
<b>Part 2B: Landfill liner specifications</b>		
<p>2.6 <b>Landfill liner system:</b></p> <p>Provide details of the proposed landfill liner system and configuration. A statement of the intended landfill liner performance (overall permeability and containment features) should also be provided in support of the proposed liner system.</p> <p>Components<sup>12</sup> of the basal and side slope liner may include:</p> <ul style="list-style-type: none"> <li>• Subgrade<sup>13</sup></li> <li>• Clay<sup>14</sup> or geosynthetic clay liner (GCL)</li> <li>• High Density Polyethylene (HDPE) geomembrane</li> <li>• leachate drainage layer<sup>15,16</sup></li> <li>• cushion geotextile layer.</li> </ul> <p>Provide detailed design drawings of the liner system (see Section 2.9 – Attachment 6).</p>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Amendment application is not related to works on the basal liner
<p>2.7 <b>Liner construction and/or installation:</b></p> <p>Provide information of the proposed construction and/or installation of the liner system. Information should be provided for each individual liner component (as the case requires). Considerations include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• any preparatory works required, e.g. earthworks/subgrade preparation, compaction methods</li> <li>• handling and storage of liner materials</li> <li>• method of placement (for clay liners include details of thickness and number of lifts, compaction method and required level of compaction)</li> </ul>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Amendment application is not related to works on the basal liner

	<ul style="list-style-type: none"> <li>keying into existing surfaces (anchor points) and/or tying into adjacent landfill cells</li> <li>conditions of underlying surface between layers</li> <li>method of jointing for liner installation (e.g. bonding, welding, or seaming)</li> <li>quality assurance testing (see Section 2.8 below).</li> </ul>		
2.8	<p><b>Construction Quality Assurance plan</b></p> <p>The application should include a Construction Quality Assurance (CQA) plan which includes the proposed testing, inspection, and verification procedures to demonstrate that materials and constructed features at the landfill meet the designs and specifications.</p> <p>The CQA plan should include as a minimum:</p> <ul style="list-style-type: none"> <li>descriptions of responsibilities, qualifications and obligations for each party involved in the CQA plan and the proposed level of supervision for liner construction/ installation</li> <li>materials testing information, including sampling locations, frequency of testing, test methods, laboratories, accreditations, applicable specifications and quality standards, data evaluation, acceptance and rejection criteria, and contingency measures in the event of failure</li> <li>hold and inspection points – these points are typically the start and finish of key stages of the work that cannot later be rectified because they will no longer be accessible</li> <li>for geosynthetic materials (i.e. geomembranes, geosynthetic clay liners, geotextiles, geonet drainage geocomposites, and geogrids), the CQA plan should address the following requirements: <ul style="list-style-type: none"> <li>manufacturing quality control – including factory test results, certifications and material warranties</li> <li>independent conformance testing – there should be a program of CQA independent conformance testing to verify that the materials supplied comply with the required specifications</li> <li>installation procedures – storage to protect from weather and other damage during installation, panel overlaps, welds, jointing and seam orientation in accordance with good practice and the manufacturer's instructions and regular inspections, repairs tested and recorded and protection from UV light after installation etc.</li> </ul> </li> <li>reporting<sup>17</sup> and record keeping requirements.</li> </ul>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Amendment application is not related to works on the basal liner
<b>Attachments</b>			
2.9	<p><b>Attachment 6: Detailed design drawings – landfill liner</b></p> <p><b>Are detailed design drawings provided which clearly depict the following:</b></p>		
	a) basal and side wall liner detail (typical section)	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<b>If N/A why:</b> Amendment application is not related to works on the basal liner
	b) leachate sump liner detail (typical section)	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<b>If N/A why:</b> Amendment application is not related to works on the basal liner
	c) inferred groundwater levels (mAHD) relative to the base of the landfill cell (mAHD); depicted on cross-section drawings (showing at least two perpendicular planes on the horizontal, e.g. north-south, east-west, or otherwise as appropriate) showing perimeter side slopes/walls. All heights of the base, sump, liner, and the perimeter side walls should be shown in mAHD.	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<b>If N/A why:</b> Amendment application is not related to works on the basal liner

	Cross sections must clearly demonstrate the separation distance between the lowest point of the landfill cell or leachate sump (whichever is lowest) and the underlying water table.		
	d) leachate collection system, depicting the distribution and layout of leachate collection pipes, sumps, leachate extraction/removal pipes with appropriate grades/slopes etc.	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<b>If N/A why:</b> Amendment application is not related to works on the basal liner
	e) anchor trench detail	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<b>If N/A why:</b> Amendment application is not related to works on the basal liner
	f) liner tie in detail and interface between adjacent cells (if required)	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	<b>If N/A why:</b> Amendment application is not related to works on the basal liner
<b>Part 2C: Stability assessment</b>			
2.10	<p><b>Stability assessment</b></p> <p>Provide a stability assessment which analyses the following aspects as a minimum:</p> <ul style="list-style-type: none"> <li>• liner interface stability <ul style="list-style-type: none"> <li>a) assessment of the capping liner system (upper surface and slopes)</li> <li>b) assessment of the basal liner system interfaces</li> </ul> </li> <li>• waste stability</li> <li>• embankment slope and foundation stability.</li> </ul> <p><u>Other information requirements:</u></p> <p>The software used and chosen model must be detailed and justified and all assumptions and data inputs must be clearly documented and justified.<sup>18</sup></p> <p>All adopted factors of safety (FoS) must be clearly documented and justified.</p> <p>Details of the material properties used in the analysis must be provided. Where material properties are not based on site-specific investigations,<sup>19</sup> clear justification must be provided to demonstrate that they are appropriate for use in the stability assessment.</p> <p>The assessment must include the elements with the highest risk of instability (critical surfaces) based on interface properties, geometry, sequence of deposition of the waste and subsurface conditions. Interim construction/filling stages must be analysed if the geometry, loading conditions and materials are of risk. Indicate the location of the sections analysed on an appropriate figure and provide justification for why specific elements have been selected (see Section 2.11 – Attachment 7).</p> <p>Confirm the design assumptions regarding internal leachate phreatic surfaces and external pore pressures for the stability analysis and model the scenarios that account for a build-up of pore water pressure in the lining system and waste during normal and abnormal operations as well as post-operations. At a minimum, the following three internal leachate scenarios must be addressed:</p> <ul style="list-style-type: none"> <li>• no phreatic surface</li> <li>• elevated phreatic surfaces representing hypothetical 'steady state' condition</li> <li>• high phreatic surface representing a malfunction of the leachate pumps.</li> </ul>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<p><b>Document reference:</b></p> <p>Application supporting document Appendix No. 5 – Cell 8 &amp; 10 Stability Statement, WML, 5 March 2020</p> <p>Previous stability assessment provided with application</p>

<p>For external pore-pressure scenarios, where relevant, the model should consider both average/expected pore pressure condition and highest inferred groundwater level.</p> <p>A stability analysis must also be performed for pseudo-static conditions to address the effect of a seismic event. The following scenarios must be assessed:</p> <ul style="list-style-type: none"> <li>• operation basis earthquake (OBE)</li> <li>• maximum design earthquake (MDE)</li> <li>• maximum credible earthquake (MCE).</li> </ul> <p>Methods for determining return period intervals for each scenario must be clearly documented and justified.</p> <p>A sensitivity analysis must also be carried out for the basal liner system interface to assess the effect of variability of material properties on the stability analysis outcomes.</p>		
<b>Attachments</b>		
<p>2.11 <b>Attachment 7: Stability assessment drawings and figures (multiple as required)</b></p> <p>Analysis drawings and/or figures including, but not limited to:</p> <ul style="list-style-type: none"> <li>• cell layout; aerial overview depicting analysed sections</li> <li>• cell cross-sections depicting analysed sections (include analysis results in table on figure)</li> <li>• other figures and drawings as required.</li> </ul>	<p>Yes <input checked="" type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>N/A <input type="checkbox"/></p>	<p><b>Document reference:</b></p> <p>Application supporting document Appendix No. 5 – Cell 8 &amp; 10 Stability Statement, WML, 5 March 2020</p>
<b>Part 2D: Leachate management</b>		
<p>2.12 <b>Leachate management system</b></p> <p>Provide a description of the proposed leachate management system<sup>20</sup> and method for managing leachate (e.g. evaporation, treatment, recirculation). A written summary of all the related infrastructure<sup>21</sup> should be provided as well as depicted on an appropriately scaled site layout plan (refer to Section 2.14 – Attachment 8).</p> <p>Please also provide the following assessment and management detail:</p> <ul style="list-style-type: none"> <li>• water balance calculation<sup>22,23</sup> to predict the volume of leachate generation over time and to demonstrate that the proposed system has sufficient capacity to manage leachate volumes over the operational life of the landfill</li> <li>• leachate management and proposed monitoring plan, including: <ul style="list-style-type: none"> <li>○ maximum head of leachate on the liner surface and leachate sump during operation of the landfill</li> <li>○ in-cell leachate monitoring, including the operational controls and infrastructure to be used to control the leachate head</li> <li>○ leachate extraction/pumping system (including details on flow rate)</li> <li>○ leachate pond management, including details on operational freeboard, mechanical aeration equipment (if required), and pond level alarms</li> <li>○ proposed leachate quality monitoring program (refer also to Part 2G)</li> <li>○ contingency plans for leachate management in the event of breakdown of various components.</li> </ul> </li> </ul>	<p>Yes <input checked="" type="checkbox"/></p> <p>No <input type="checkbox"/></p>	<p>Application supporting document</p>
<p>2.13 <b>Leachate pond design and construction.</b></p> <p>Provide details of the leachate pond design, including but not limited to:</p> <ul style="list-style-type: none"> <li>• pond dimensions and volumetric capacity<sup>24</sup></li> <li>• pond liner system: <ul style="list-style-type: none"> <li>○ configuration of pond liner<sup>25</sup></li> <li>○ statement of intended performance (overall permeability and containment features)</li> </ul> </li> </ul>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	<p>Amendment application is not related to changes to the leachate pond design</p>



	<ul style="list-style-type: none"> <li>associated leachate conveyance infrastructure and equipment and connection points at the leachate pond(s)</li> <li>liner construction and/or installation<sup>26</sup></li> <li>construction quality assurance (CQA) measures to be employed<sup>27</sup>.</li> </ul> <p>Design drawings of the liner system including that of the liner anchor trench must be provided (refer to Section 2.15 – Attachment 9).</p>		
<b>Attachments</b>			
2.14	<p><b>Attachment 8: Figure/plan – layout of leachate management system</b></p> <p>Provide a layout plan of the leachate management system which clearly depicts all associated infrastructure and equipment.</p> <p>Multiple plans can be provided.</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>N/A <input checked="" type="checkbox"/></p>	<p><b>If N/A why:</b></p> <p>Amendment application is not related to changes to the leachate pond design/layout</p>
2.15	<p><b>Attachment 9: Are Detailed design drawings provided which clearly depict the following:</b></p>		
	<p>a) Basal and side wall liner detail (typical section).</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>N/A <input checked="" type="checkbox"/></p>	<p><b>If N/A why:</b></p> <p>Amendment application is not related to changes to the leachate pond design/layout</p>
	<p>b) Inferred groundwater levels (mAHD) relative to the base of the leachate pond base (mAHD), depicted on cross-section drawings (showing at least 2 perpendicular planes on the horizontal, e.g. north-south, east-west, or as appropriate) showing perimeter side slopes/walls. All heights of the base, liner and the perimeter side walls should be shown in mAHD.</p> <p>Cross-sections must clearly demonstrate the separation distance between the lowest point of the leachate pond and underlying water table.</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>N/A <input checked="" type="checkbox"/></p>	<p><b>If N/A why:</b></p> <p>Amendment application is not related to changes to the leachate pond design/layout</p>
	<p>c) Anchor trench detail.</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>N/A <input checked="" type="checkbox"/></p>	<p><b>If N/A why:</b></p> <p>Amendment application is not related to changes to the leachate pond design/layout</p>
<b>Part 2E: Landfill gas management</b>			
2.16	<p><b>Landfill gas management system:</b></p> <p>Provide details of the proposed landfill gas management system including:</p> <ul style="list-style-type: none"> <li>a detailed description of the proposed management system, installation procedures, installation timeline, monitoring, and maintenance procedures, including details on: <ul style="list-style-type: none"> <li>estimated gas generation rates across the entire lifespan of the landfill<sup>28</sup></li> <li>the containment measures to be implemented to reduce subsurface migration (e.g. installation of appropriate basal and capping liner systems)</li> <li>the collection system (active or passive) and layout of landfill gas piping and extraction wells (vertical or horizontal or both), including details on installation processes and timeframes</li> <li>utilisation of captured gas (e.g. flaring, treatment, and reuse in a system of a combustion)</li> <li>specifications of combustion engines/flares and likely emissions (if relevant)</li> </ul> </li> </ul>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	<p>Amendment application is not related to changes or construction of the landfill gas management system.</p> <p>LF gas management system is already installed in the areas to be capped. Capping will be sealed around existing bores and installed below existing distribution pipelines</p>

	<ul style="list-style-type: none"> <li>○ in-waste gas monitoring points, perimeter monitoring bores and associated monitoring program (refer also to Part 2G)</li> <li>○ contingency plans in the event of breakdown of various components.</li> </ul>		
<b>Attachments:</b>			
2.17	<p><b>Attachment 10: Drawings and figures – landfill gas management system</b></p> <p>Design drawings and layout figure(s) of the proposed landfill gas management system including, but not limited to:</p> <ul style="list-style-type: none"> <li>• in-cell layout of gas collection infrastructure (aerial and cross-section diagrams should be provided where relevant)</li> <li>• overview of associated above-ground gas management infrastructure</li> <li>• landfill gas monitoring locations.</li> </ul> <p>Multiple drawings and figures can be provided.</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>N/A <input checked="" type="checkbox"/></p>	<p><b>If N/A why:</b></p> <p>Amendment application is not related to changes or construction of the landfill gas management system.</p>
<b>Part 2F: Surface water management</b>			
2.18	<p><b>Surface water management<sup>29</sup></b></p> <p>Provide details on the proposed stormwater management strategies and controls for the landfill premises including, but not limited to:</p> <ul style="list-style-type: none"> <li>• diversion of stormwater away from areas containing waste using drainage features, bunds, interceptor drains or other drainage systems</li> <li>• details on clean stormwater holding ponds to be constructed (if required); design specifications and an overview of construction works should also be provided</li> <li>• details of any proposed controlled releases of clean stormwater into the environment and/or proposed reuse options on-site</li> <li>• erosion and sediment control along drainage lines and discharge points, including stormwater flow control, vegetation, detention ponds, minimising land disturbance, and other temporary and permanent erosion protection measures.</li> </ul>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	<p>Amendment application is not related to changes to the stormwater management system</p>
<b>Attachments:</b>			
2.19	<p><b>Attachment 11: Drawings and figures – surface water management infrastructure</b></p> <p>Design drawings and layout figure(s) of the proposed surface water management infrastructure.</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>N/A <input checked="" type="checkbox"/></p>	<p><b>If N/A why:</b></p> <p>Amendment application is not related to changes to the stormwater management system</p>
<b>Part 2G: Monitoring requirements</b>			
2.20	<p><b>Leachate quality monitoring</b></p> <p>Provide details of the proposed leachate quality monitoring program (refer also to Part 2D), including, but not limited to, sampling locations, sampling methodology, analysis suite, sampling frequency, and reporting requirements.</p>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	<p>Not relevant to scope of amendment</p>
2.21	<p><b>Landfill gas monitoring</b></p> <p>Provide details on the proposed landfill gas monitoring program (refer also to Part 2E), including, but not limited to, sampling locations, well/monitoring point construction specifications, sampling methodology, analysis suite, sampling frequency and reporting requirements.</p> <p>Proposed sampling locations should give regard to the landfill surface, subsurface (in-waste), perimeter, subsurface services on and adjacent to the site, buildings or structures on and adjacent to the site, and landfill gas treatment/management infrastructure (such as flares and combustion engines).</p>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	<p>Not relevant to scope of amendment</p>

	Action levels for different monitoring locations must be documented to outline what action will be taken to address the matter and/or what further monitoring will be carried out to verify the effectiveness of corrective actions.		
2.22	<p><b>Groundwater and surface water monitoring</b></p> <p>Provide details on the proposed groundwater and surface water monitoring program, including, but not limited to:</p> <ul style="list-style-type: none"> <li>• sampling locations</li> <li>• well construction specifications</li> <li>• sampling methodology</li> <li>• analysis suite</li> <li>• sampling frequency</li> <li>• reporting requirements.</li> </ul> <p>The monitoring program should as a minimum seek to establish:</p> <ul style="list-style-type: none"> <li>• the background groundwater quality and levels (in mAHD and mBGL)</li> <li>• the background surface water quality and levels/flow rates and flow direction</li> <li>• the local aquifers, and groundwater flow direction and rates of each aquifer</li> <li>• a monitoring network that acts as an early indicator of leachate contamination in groundwater or surface water prior to offsite migration.</li> </ul> <p>For a new facility, the operator should seek to demonstrate baseline groundwater and/or surface water conditions prior to construction works and to feed the results of this monitoring into the initial CSM development.</p>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	Not relevant to scope of amendment
<b>Attachments:</b>			
2.23	<p><b>Attachment 12: Landfill monitoring plan</b></p> <p>Applicants must document the proposed monitoring program in a landfill monitoring plan or a series of equivalent standalone monitoring and/or management plans.</p> <p>The SAQP required in Part 2.22 should be incorporated in this plan.</p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>N/A <input checked="" type="checkbox"/></p>	<p><b>If N/A why:</b></p> <p>Not relevant to scope of amendment</p>
<b>Part 3: Premises operations</b>			
3.1	<p><b>Landfill management and operations</b></p> <p>Provide operational detail on the following operational aspects:</p> <ul style="list-style-type: none"> <li>• operational hours of the facility</li> <li>• security fencing and site access</li> <li>• internal traffic control</li> <li>• details on weighbridge for monitoring waste acceptance</li> <li>• waste acceptance,<sup>30</sup> including details of acceptance and handling requirements for different waste types (e.g. putrescibles, asbestos waste, special waste types, contaminated solid wastes, etc.) and record keeping</li> <li>• landfilling method/waste placement, filling sequence and tipping face management (the vertical and horizontal size of the tipping face must be specified).</li> <li>• waste cover<sup>31</sup> (details on daily, intermediate and final cover, materials to be used, volumes required and storage area pre-use), litter and debris control (measures to prevent the discharge of litter and debris beyond the active landfill area and greater premises boundary)</li> <li>• dust management – measures to prevent operations impacting environmental values and social surroundings</li> <li>• odour management – measures to protect environmental values and social surroundings from unreasonable emissions of odour</li> <li>• noise management – demonstrate and maintain compliance with the assigned levels specified in the Environmental Protection (Noise) Regulations 1997 (Noise Regulations)</li> </ul>	<p>Yes <input checked="" type="checkbox"/></p> <p>No <input type="checkbox"/></p>	<p><b>Document reference:</b></p> <p>Application supporting document Section 14</p> <p>Only contains emission information relevant to the proposed amendments</p>

<ul style="list-style-type: none"> <li>• fire prevention and management (measures to minimise the risk of fires occurring at the facility) and emergency response procedures for fire and other emergencies (e.g. spills, landfill gas emergencies, etc.)</li> <li>• vector management (measures to prevent the attraction, refuge, growth and spread of vermin and pests to mitigate impacts to environmental values and social surroundings)</li> <li>• chemical and fuel stores, including details of storage requirements</li> <li>• environmental monitoring (refer to Part 2G)<sup>32</sup></li> <li>• contingency planning (map out all likely incidents and document appropriate corrective measures).</li> </ul>		
<b>Attachments:</b>		
<b>3.2 Attachment 13: Landfill environmental management plan</b>	Applicants must document the operational management aspects in a consolidated landfill environmental management plan (LEMP). <sup>33</sup> The landfill monitoring plan (required by part 2G) can form part of the LEMP.	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
<b>Part 4: Landfill closure and rehabilitation</b>		
<b>4.1 Closure and aftercare management</b> Provide information about the proposed closure and aftercare management of the facility, including, but not limited to: <ul style="list-style-type: none"> <li>• details of future intended land use</li> <li>• details of progressive closure, capping and rehabilitation of used cells on the premises</li> <li>• final landform and surface contours (pre- and post-settlement) for each landfill cell(s) which forms the scope of the application; a discussion on the final landform in the context of surrounding topography must also be provided</li> <li>• landfill cap design detail and drawings (specifications and materials to be used in the final cap) – where geomembranes are proposed to be used in a capping system, similar design detail to that provided in Part 2B (landfill liner specifications) must be submitted (see Section 4.2 – Attachment 14)</li> <li>• design detail for connections in the cap to landfill gas and/or leachate collection and monitoring points (where relevant)</li> <li>• stormwater management measures for water shed from the cap and final landform</li> <li>• construction quality assurance (CQA) measures to be employed in cap construction/installation</li> <li>• details on post-closure monitoring and aftercare management<sup>34</sup> (details of proposed environmental monitoring must be consistent with the information requirements outlined in Part 2G)</li> </ul>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>Document reference:</b> Application supporting document Appendix No. 1 - Millar Road Landfill Facility Rehabilitation and Post-Closure Plan – November 2015 – Issued 1 December 2015, Draft Application supporting document Appendix No. 2 – Cell 10 & 11 Capping Drawings Application supporting document Appendix No. 3 – Cell 10 & 11 Capping Specification Application supporting document Appendix No. 4 – Cell 10 & 11 Capping CQA Plan <b>Sufficient: Yes</b>
<b>Attachments:</b>		
<b>4.2 Attachment 14: Landfill closure plan (including design figures)</b>	Applicants must document the proposed objectives and closure and rehabilitation measures (as required by Part 4.1) in a consolidated landfill closure plan (LCP). Within the plan the following drawings/figures must be provided: <ol style="list-style-type: none"> <li>final contour map – depicting proposed final contours, top &amp; side slopes, and surface drainage features</li> <li>typical cross-sections of the proposed landfill cap and design (refer to Part 2A for liner design/construction information requirements – the same should be followed for the capping liner)</li> </ol>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>

c) location of passive gas and leachate management infrastructure intended to remain on the premises throughout closure.		
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