Supplementary Amendment Report

Department initiated Amendment

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

Licence Number	L8422/2010/2
Licence Holder	Edna May Operations Pty Ltd
ACN	136 365 001
File Number	DER2017/000298-1
Premises	Edna May Gold Project Warrachuppin Road WESTONIA WA 6423 Mining tenements: M77/88, M77/110, M77/124, G77/122 and L77/18 As defined by the Premises maps attached to the Revised Licence
Date of Report	29 January 2021
Decision	Revised licence granted

Terrel MacGregor

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Terrel MacGregor
A/MANAGER – RESOURCE INDUSTRIES
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an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Table of Contents

1. Decision summary

Licence L8422/2010/2 is held by Edna May Operations Pty Ltd (Licence Holder) for the Edna May Gold Project (the Premises), located at mining tenements M77/88, M77/110, M77/124, G77/122 and L77/18, Westonia.

This Suppletory Amendment Report documents the assessment of potential risks to the environment and public health from leachate emissions associated with the relocation of the landfill and bioremediation pad. As a result of this assessment, Revised Licence L8422/2010/2 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.

2.2 Application summary

On 13 July 2020, the Licence Holder submitted an application to the department to amend Licence L8422/2010/2 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The amendment included the relocation of existing landfill and bioremediation facility to a different area within the Corsini waste dump. This amendment was granted on 4 November 2020.

As part of the previous amendment consultation period, and following the grant of this amendment, the Licence Holder raised concerns over licence condition 5, being the requirement to meet a specification for the landfill meeting a permeability of 1 x 10^{-8} m/s. The Licence Holder has cited DWER's document *Landfill Waste Classification and Waste Definitions 1996 (as amended 2019)* (Landfill Definitions) stating that the definition of a class II landfill means an unlined landfill. Conditions for the landfill prior to being amended on 4/11/20 required a liner of compacted clay.

The Delegated Officer notes that the Landfill Definitions are for guidance purposes and that the controls are included based on risk to the environment and public health. This amendment is the result of a DWER initiated amendment to reassess the risk of leachate from landfill and bioremediation pad operations only and is a supplementary risk assessment to the one granted 4/11/2020.

3. 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 *Guidance Statement: Risk Assessments* (DER 2017).

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.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this Amendment Report are detailed in Table 1 below. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Waste and leachate	Leachate from landfill and bioremediation area	Infiltration through base and sides of landfill liner and bioremediation pad	Groundwater buffer between base of landfill, bioremediation pad and maximum groundwater level. Groundwater levels within Westonia vary between 28-40m below ground level (mbgl) (pre-mining levels) and groundwater levels have declined as a result of dewatering of the main Edna May pit (162m bgl). The bioremediation pad is located on top of a 10m layer of mine waste (10m above the natural surface level) providing an additional buffer between the base and the groundwater level. Distance to groundwater at the bioremediation pad will be a minimum of 58m. There will be no stockpiling of waste, it will be directly landfilled or processed through the bioremediation pad. The bioremediation facility require compacted in situ clay material.

3.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), 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 2 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 *(Guidance Statement: Environmental Siting* (DER 2016)).

Table 2: Sensitive environmental receptors and distance from prescribed activity

Environmental receptors	Distance from prescribed activity
RIWI Act 1914 – Groundwater area – Westonia Groundwater Area	Within premises boundary
Eucalypt woodlands of the Western Australian Wheatbelt (Threatened Ecological Community and Priority 3 Ecological Community) *Eucalyptus longicornis* (Red Morrel Woodland of the Wheatbelt) (Priority 1 Ecological Community)	Within premises boundary

Eremophila resinosa (Threatened Flora)	Within premises boundary
Eucalyptus salmonophloia (Salmon gum woodlands) (Priority 3)	Within premises boundary
Environmental receptors	**Distance from prescribed activity**
Austrostipa blackii (Priority 3)	Within premises boundary
Acacia ancistrophylla var. perarcuata (Priority 3)	Within premises boundary
Carrabin Nature Reserve and Sandford Rocks Nature Reserve	Located 6.8km south east of the premises boundary and 6.2km south of the premises boundary. The Delegated Officer considers it unlikely impacts to this receptor will occur as a source pathway receptor linkage does not exist based on the distance from proposed activities. Given this fact, these receptors are not further assessed in the risk assessment
Groundwater	Within Westonia area occurs in weathered and fractured bedrock aquifers with depths to groundwater varying between 28 – 40m below ground level (mbgl) (pre-mining levels). Groundwater levels have since declined as a result of dewatering of the main Edna May pit (53m AHD). Dewatering at the site has created a cone of depression >100m deep around the pit. All groundwater extracted from production and dewatering bores is used in processing and dust suppression. The current groundwater quality from the extraction sources in 2018 has a near-neutral pH and is hypersaline. Groundwater from the monitoring bores ranged between 24,500 – 49,300 mg/L TDS.
Surface water	Ephemeral creeks in the general area drain into a number of salt lakes; the nearest of which is Lake Mount Brown, located approximately 50 km north of the premises. Drainage is to the northeast and normally terminates 35km to the northwest at Lake Camion – Lake Brown. The Delegated Officer considers it unlikely impacts to this receptor will occur as a source pathway receptor linkage does not exist based on the distance from proposed activities. Given this fact, these receptors are not further assessed in the risk assessment

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), 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 3.

The Revised Licence L8422/2010/2 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. Category 5 activities.

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

Table 3. Risk assessment of potential emissions and discharges from the premises during operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions[2] of licence	Alteration of regulatory controls based on reassessment
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
Operation								
Operation of landfill	Waste and leachate	Infiltration through base and sides of landfill and bioremediation pad and seepage to groundwater, and detriment to flora health.	Underlying groundwater Surrounding native vegetation (priority, listed fauna / flora /TEC)	Refer to Section 3.1.1	C = Minor L = Unlikely **Medium Risk**	Y	N/A	Reference to compacted clay lining as a construction and operational requirement of the landfill has been removed from Table 1 of condition 3 and Table 2 of condition 5. Waste/materials accepted at the landfill does not include those listed is condition 3 and are defined in condition 8. No additional controls required. The groundwater depth is minimum 28 mbgl, and the small volume received by the landfill is unlikely to infiltrate into the groundwater and adversely impacting the groundwater quality.
Operation of bioremediation area					C = Moderate L = Unlikely **Medium Risk**		N/A	Condition 5, Table 2 amended to remove the permeability reference and require the bioremediation facility to be compacted in-situ clay material. Other relevant conditions in current licence still apply.
Operation of landfill	Contaminated stormwater	Direct discharge via overtopping causing contamination of groundwaters and detriment to flora health.	Underlying groundwater Surrounding native vegetation (priority, listed fauna / flora /TEC)	Refer to Section 3.1.1	C = Minor L = Unlikely **Medium Risk**	Y	N/A	N/A
Operation of bioremediation area					C = Moderate L = Unlikely	Y	N/A	N/A

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence holder's controls sufficient?	Conditions[2] of licence	Alteration of regulatory controls based on reassessment
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence holder's controls**				
					Medium Risk			
Closure of existing landfill and bioremediation pad	Waste and leachate	Infiltration through base and sides of landfill liner and bioremediation pad and seepage to groundwater, and detriment to flora health.	Underlying groundwater Surrounding native vegetation (priority, listed fauna / flora /TEC)	Refer to Section 3.1.1	C = Minor L = Rare **Low Risk**	Y	N/A	N/A

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

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

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Licence Holder was provided with the draft amendment on 15 December 2020	No comments. Request made on 21 December 2020 to waive the consultation period and that the licence be issued.	N/A

5. 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.

5.1 Summary of amendments

Table 5 provides a summary of the proposed amendments 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 5: Summary of licence amendments

Condition no.	Amendments
5 and Table 2	Removal of requirement for in-situ compacted clay to meet a permeability of 1 x 10^{-8} m/s for the landfill. Removal of requirement to meet a permeability of 1 x 10-8 m/s for the bioremediation facility.
3 Table 1	Removal of reference to landfill
7(a)	Alteration of wording for certification requirements for the construction of the bioremediation facility.

References

1. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
2. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. DER, 2014, *Guideline Assessment and management of contaminated sites, Contaminated sites guidelines,* Perth, Western Australia.
5. DEC, 2012, *Western Australian guidelines for biosolids management*, Perth, Western Australia.
6. DWER, 2019, *Landfill Waste Classification and Waste Definitions 1996 (as amended 2019),* Perth, Western Australia.