



Application for Licence Amendment

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

Licence Number	L9375/2023/1
Licence Holder	Oz Minerals Musgrave Operations Pty Ltd
ACN	640 213 341
File Number	DER2023/000114~3
Premises	West Musgrave Project Mining Licences: M 69/149, L 69/56 and L 69/57 As indicted by the map in Schedule 1 and defined by the coordinates in Schedule 2
Date of Report	07 June 2024
Decision	Revised licence granted

MANAGER, PROCESS INDUSTRIES

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

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1. Decision summary

Licence L9375/2023/1 (L9375) is held by Oz Minerals Musgrave Operations Pty Ltd (Licence Holder) for the West Musgrave Project (the Premises), located on mining licences M69/149, L69/56 and L69/57.

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 L9375 has been granted.

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 12 March 2024, the Licence Holder submitted an application to the department to amend Licence L9375/2023/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Removal of the existing Sequence Batch Reactor (SBR) wastewater treatment plants and associated wastewater irrigation from the Licence;
- Addition of a recently constructed Passive Wastewater Treatment Plant (WWTP), constructed via works approval W6579/2021/1; and
- Addition of prescribed premises Category 77 (concrete batching) to the Licence following construction under works approval W6579/2021/1.

Both the passive wastewater treatment plant and concrete batching plant were assessed and operated via time limited operations under works approval W6579/2021/1. This amendment to the Licence is to enable the ongoing operation of this infrastructure at the Premises.

Table 1 below outlines the proposed changes to the existing Licence.

Table 1: Proposed design or throughput capacity changes

Category	Current design or throughput capacity	Proposed design or throughput capacity	Description of proposed amendment
54	30 m ³ /day	275 m ³ /day	Removal of SBR's and associated irrigation. Addition of Passive WWTP
77	-	150,000 tonnes per annum ¹	Addition of Concrete Batching Plant (CBP)

Note 1: Maximum production value relates to concrete produced for off-site purposes only.

2.2.1 Operation of the Passive WWTP

The Passive wastewater treatment plant (WWTP) treats all wastewater for reuse as grey water. The treatment system consists of a series of anaerobic baffled reactor tanks, balance tanks, treatment filter beds and a tertiary treatment train (as depicted in Figure 1.). Sewage waste is received by the underground primary treatment (anaerobic digestion) tanks prior to discharge

to grass and soil filter beds sitting over a low permeability-lined basin, designed to prevent seepage to groundwater. While some water and nutrients can be taken up by vegetation and soil, seepage is collected in a drainage channel that feeds to the tertiary (UV, ozone and chlorination) treatment system before being pumped to storage tanks for later reuse.

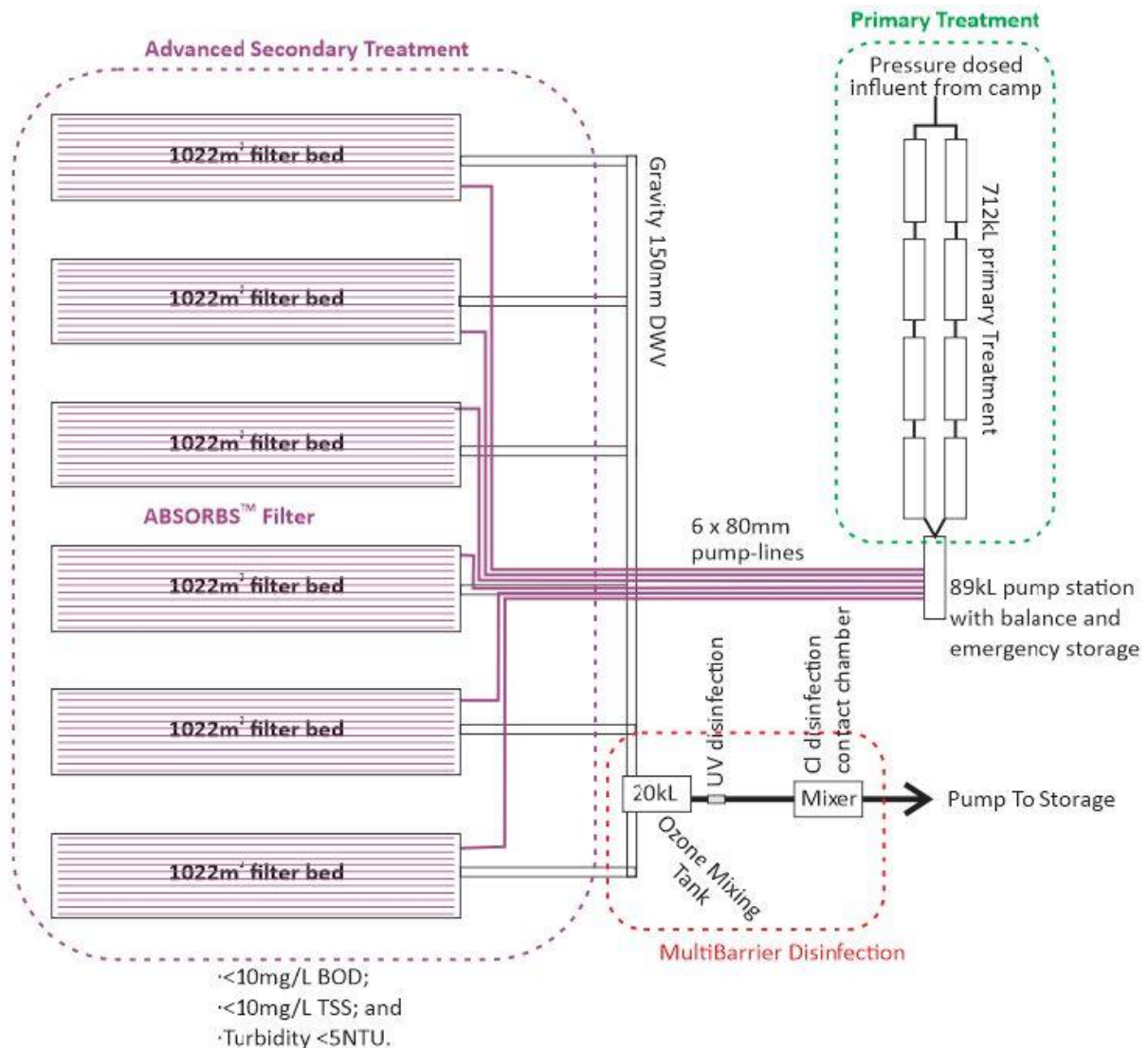


Figure 1: Passive WWTP treatment train

The plant treats wastewater to a higher effluent quality and allows for blending with raw water to enable its re-use as treated wastewater for dust suppression, process water and future irrigation needs. The Licence Holder advises that this reduces groundwater abstraction requirements, and avoids the long term need for an effluent spray field. The use of treated wastewater for irrigation is only to be undertaken as required.

The system layout is consistent with the Department of Water (DoW) 'Water Quality Protection Note WQPN 22 Irrigation with nutrient rich wastewater' guideline. It is installed such that it is not exposed to permanent or seasonal inundation of stormwater, therefore does not require complex civil design for artificial drainage or diversion of any natural watercourses.

2.2.2 Operation of Concrete Batching Plant

The production limit of 150,000 tonnes per annum set by this amendment is assessed under Part V of the EP Act and relates to concrete manufactured for offsite purposes only (as per

Category 77 of the EP Regulations). The Licence Holder has advised that concrete is also produced and utilised onsite (~450,000 tonnes per annum). All concrete batching activities are required to comply with the requirements of the Environmental Protection (Concrete Batching and Cement Products Manufacturing) Regulations 1998.

2.2.3 Compliance History

On completion of the construction of the Passive WWTP, the Licence Holder submitted an Environmental Compliance Report (ECR) on 6 September 2023, required by Condition 5 of the related works approval W6579/2021/1. The report was signed off by a certifying engineer and considered to meet the requirements of the specifications within the works approval. A minor variation was noted regarding the specifications of the sand used in Bed 4, however this variation was not considered significant, and the performance of the bed would continue to be monitored.

On 13 October 2023, the Licence Holder submitted an Environmental Commissioning Report, following the completion of commissioning on the Passive WWTP on 29 August 2023. This report addressed the monitoring requirements of Condition 14 and 15 of the Works Approval and satisfied the requirements of Condition 17.

Similarly, the Licence holder further submitted an ECR the concrete batching plant on 10 November 2023, upon completion of the construction. The report demonstrated compliance of the infrastructure construction requirements. Time Limited Operations was commenced following the submission of the report on 22 November 2023.

A review of the Department's internal records, including the Incidents and Complaints Management System (ICMS) found no reported incidents or complaints relating to the passive WWTP or concrete batching plant.

2.3 Other Approvals

2.3.1 Part IV of the EP Act

The West Musgrave Project was assessed under Part IV of the EP Act. Ministerial Statement 1188 (MS1188) was issued on 20 April 2022 to minimise impacts of the mine and associated infrastructure to the environment. The ongoing use of the wastewater treatment plant and concrete batching plant are consistent with MS1188.

2.3.2 Department of Health

The Department of Health (DoH) issued an approval in principle for the construction of the Passive WWTP under Works Approval W6579/2021/1. The approval covers the produced effluent to be used for dust suppression, ground conditioning and industrial process water. The DoH classes the proposed uses as a medium exposure level under the Guidelines for the Non-potable Uses of Recycled Water in Western Australia (2011).

On 10 November 2023, DoH issued Recycled Water Scheme Approval H68/00000 relating to;

- Effluent quality monitoring and reporting;
- Operational and maintenance;
- The recycled water management plan;
- Compliance assurance; and
- Annual reporting to the DOH.

The recycled water quality monitoring limits are reflected in condition 5 of the updated licence.

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 *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.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 2 below.

Table 2 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 2: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Wastewater	WWTP	Overland flow or discharge of untreated or partially treated wastewater	Wastewater and sludge stored and treated in tanks fitted with high level alarms to avoid discharge.
Treated Wastewater		Infiltration of nutrient rich (treated) wastewater impacting groundwater quality and/or proliferation of invasive species.	Contingency storage for up to 24 hours of normal flow if discharge is suspended while other measures (pumping and carting) in place to handle any excess. The application of effluent controlled to prevent pooling and surface water run-off. Cumulative flow meter at discharge point to storage tank to record volume produced. High level warning alarms. Monitoring required under the DoH Recycled Water Scheme approval – additional controls in relation to the use of the recycled water not required. Under WMP procedures all water used for dust suppression, saline or not, is treated as if saline and overspray onto vegetation is avoided through road design and operational procedures. Treated water quality after disinfection shall comply with the Medium Exposure Risk Level water quality objectives in Table 7 of the “Guidelines for the Non-Potable Uses of Recycled Water in Western Australia 2011”.
Odour		Air/windborne pathway causing impacts to health and amenity.	No controls proposed – no nearby receptors

Emission	Sources	Potential pathways	Proposed controls
Dust	CBP	Air/windborne pathway causing impacts to health and amenity	Concreted areas within the concrete batching plant kept clean by hosing and sweeping. Cement be delivered to the batching plant in a sealed tanker with pneumatic discharge.
Noise			No controls proposed – no nearby receptors
Sediment laden wash water		Overland runoff potentially causing ecosystem disturbance or impacting surface water quality.	Plant to be operated in accordance with Environmental Protection (Concrete Batching and Cement Products Manufacturing) Regulations 1998. Clean stormwater diverted away from process areas. Plant is designed to ensure that contaminated water is captured and reused in the batching process. A wedge pit and two slurry pits constructed for the management of wastewater.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), 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 3 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 2020)).

Table 3: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from activity / prescribed premises
Residential receptor – Jameson community (Mantamaru)	26km north of the premises
Groundwater Bores	Jameson Bore - 29km North Linton Bore – 17km Southeast of premises of WWTP Not in PDWSA
Heritage sites	Pilypiriny – artefacts, scatter, camp, plant and water resources - 5 km east of WWTP
Environmental receptors	Distance from activity / prescribed premises
Terrestrial Fauna Threatened/Priority fauna	Great Desert Skink (<i>Egernia kintorei</i>) listed as vulnerable Priority fauna species in the development envelope – not near WWTP site

Native vegetation TEC	No TEC/PEC within 100km of premises No threatened flora identified
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3.2 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 3.1. 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 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 4.

The Revised Licence L9375/2023/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises i.e. wastewater treatment plant activities.

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

Table 4. 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	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Operation								
WWTP	Wastewater	Overland flow or discharge of untreated or partially treated wastewater causing ecosystem disturbance or impacting groundwater quality. Infiltration of nutrient rich (treated) wastewater impacting groundwater quality and/or proliferation of invasive species.	Native vegetation No nearby groundwater users No nearby surface water	Refer to Table 2	C = Minor L = Rare Low Risk	Y	Replace existing SBR conditions with Passive WWTP specifics (Condition 1, 2, 3, 4, 5 and 10)	Based on the applicant's proposed controls, the risk of untreated or partially treated wastewater being discharged to the environment is low. The low potential for surface water in the local area further reduces the risk of impacts.
	Treated wastewater for dust suppression, process water and irrigation (as required)	Infiltration of nutrient rich (treated) wastewater impacting groundwater quality and/or proliferation of invasive species.	Native vegetation No nearby groundwater users No nearby surface water	Refer to Table 2	C = Minor L = Rare Low Risk	Y	Condition 1, 3, 4, 5, 10	No nearby sensitive receptors. The re-use of treated effluent is subject to DoH recycled water scheme approvals and quality requirements. Monitoring prior to re-use for dust suppression.
	Odour	Air/windborne pathway causing impacts to health and amenity	Nearest residential receptors 26km away – Jameson Community Visitors to area Heritage Sites 5km away	Refer to Table 2	C = Slight L = Rare Low Risk	Y	N/A	No reasonable pathway to residential receptors or visitors to cultural heritage sites due to distance. Odours from the WWTP when operating are expected to be highly localized.

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions ² of Licence	Justification for additional regulatory controls
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Concrete Batching Plant	Dust	Air/windborne pathway causing impacts to health and amenity	Nearest residential receptors 26km away – Jameson Community Adjacent vegetation associations.	Refer to Table 2	C = Minor L = Rare Low Risk	Y	Condition 1	No nearby sensitive receptors. The delegated officer has determined that application controls are consistent with the Environmental Protection (Concrete Batching and Cement Products Manufacturing) Regulations 1998 and are suitable for the management of risks associated with dust.
	Noise		Nearest residential receptors 26km away – Jameson Community	Refer to Table 2	C = Slight L = Rare Low Risk	Y	N/A	No reasonable pathway to residential receptors or visitors to cultural heritage sites due to distance. Noise from the concrete batching plant operating are expected to be highly localized.
	Sediment laden wash water	Overland runoff potentially causing ecosystem disturbance or impacting surface water quality.	Adjacent vegetation associations. Depth to groundwater approximately within 6.5 mbgl. No human groundwater users in the area	Refer to Table 2	C = Minor L = Rare Low Risk	Y	Condition 1	The delegated officer has determined that application controls are consistent with the Environmental Protection (Concrete Batching and Cement Products Manufacturing) Regulations 1998 and are suitable for the management of risks associated with wastewater.

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

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 2 provides a summary of the consultation undertaken by the department.

Table 2: Consultation

Consultation method	Comments received	Department response
The Licence Holder was provided the draft amendment on 30 May 2024 and provided responses on 31 May and 5 June 2024.	<p>The Licence Holder requested clarification to clearly define that the production limit set for the Concrete Batching Plant is for concrete manufactured for off-site purposes only.</p> <p>The Licence Holder also requested the amended Licence be issued as soon as possible.</p>	Noted. The decision report has been updated to clearly define the limit as off-site purposes only.

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 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Licence as part of the amendment process.

Table 6: Summary of Licence amendments

Condition no.	Proposed amendments
Table 1	Removal of SBR operational requirements Inclusion of passive WWTP and concrete batching plant operational requirements Updated infrastructure locations
Table 2	Inclusion of treated effluent emissions for dust suppression
Table 3	Removal of SBR monitoring requirements Inclusion of passive WWTP monitoring requirements and updated limits
Table 4	Updated reporting requirements reuse and disposal of treated effluent
Figure 1	Updated to newest version
Figure 3	Addition of figure for Passive WWTP infrastructure

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.