Application for Works Approval Amendment

Part V Division 3 of the Environmental Protection Act 1986

Works Approval Number W6579/2021/1

Works Approval Holder Oz Minerals Musgrave Operations Pty Ltd

ACN 640 213 341

File Number DER2021/000448~7

Premises West Musgrave Project

Legal description -

Mining Licences: M 69/149, L 69/56 and L 69/57, as defined in Schedule 2 of revised Works Approval

Date of Report 17 July 2024

Decision Revised works approval granted

MANAGER, PROCESS INDUSTRIES

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

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1. Decision summary

Works Approval W6579/2021/1 (W6579) is held by Oz Minerals Musgrave Operations Pty Ltd (Works Approval 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 construction and operation of the Premises. As a result of this assessment, Revised Works Approval W6579 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 25 March 2024, the Works Approval Holder submitted an application to the department to amend Works Approval W6597 under section 59 and 59B of the *Environmental Protection Act* 1986 (EP Act). The following amendments are being sought:

- Installation of a 60MW temporary diesel power plant to be utilized until the permanent power plant is commissioned/operational (up to 63 x 1.2MW diesel gen sets operating in an n+2 arrangement).
- Minor changes to the design of the permanent power plant including; type/number of generators. Overall power capacity to remain below 60MW.
- Changes to the total volume of bulk chemical storage from 5,559m3 to 8,901m³.
 Includes additional fuel associated with the temporary power plant and satellite workshops/refuelling areas. Some minor reductions of fuel storage at assessed locations.

In addition to these changes, the passive wastewater treatment plant and concrete batching plant will be removed from the Works Approval to reflect the transfer of this infrastructure to the corresponding licence for the premises (L9375/2023/1). With the recent submission by the applicant to amend the licence to include the ongoing operation of the premises landfill and screening plant, these categories have also been removed the works approval. Table 1 below outlines the proposed changes to the existing Works Approval.

Table 1: Proposed design/throughput capacity changes

Category	Current design/ throughput capacity	Proposed design/ throughput capacity	Description of proposed amendment
52	56MW	Up to 60MW (temporary & permanent power)	Update electrical power generation to align with that approved by Ministerial Statement 1188; Installation of temporary power plant to be utilised until the permanent plant is commissioned/operational.

with the temporary power plant.	73	5,559m³ in aggregate	8,901m³ in aggregate	Increase in bulk storage volume to include the additional fuel associated with the temporary power plant.
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2.2.1 Electric Power Generation Facility

A permanent electric power generation facility is currently approved under the works approval with a 56MW instantaneous load capacity. The amendment proposes to increase this limit to 60MW to align with approved via Ministerial Statement 1188.

The amendment also proposes the installation of a temporary electric power generation facility on site to enable other infrastructure commissioning activities to occur while the permanent power plant is being constructed. It is planned to operate for up to 18 months, after which it will be decommissioned and removed from site. All equipment used on the temporary power plant will be modular to enable demobilisation from site following the commencement of operation of the permanent power plant.

The temporary power generation facility will include;

- Containerized thermal electric power generator sets (diesel fuel);
- Containerized transformer substations, step-up transformers, and neutral earthing resistors; and
- Double bunded diesel fuel tanks.

2.2.2 Bulk Chemical Storage

The amendment proposes changes to hydrocarbon storage on the premises. Diesel fuel storage is required in order to run both the permanent and temporary power generation facility, workshops, accommodation village and old exploration camp. An increase in bulk fuel storage is sought to meet the demands of the additional infrastructure, including at the following hydrocarbon storage areas;

- Non-Processing Infrastructure Bulk Fuel Farm (mining fleet refuel area)
- Non-Processing Infrastructure Logistics yard
- Minerals Processing Plant Fuel storage
- Temporary Electricity Generation fuel storage area
- Aviation fuel storage
- Exploration Camp
- Mobile fuel storage

Bulk fuel storage will consist of a combination of multiple units of:

- single skinned in-situ weld/bolted tanks placed within suitable sized and constructed bunds. Each tank would be contained in a single bunded area; or
- double skinned, self-bunded fuel bullet tanks.

All chemicals and hydrocarbon storage areas will be constructed in accordance with Australian Standard (AS) 1940: *The storage and handling of flammable and combustible liquids* and tank storage constructed in accordance with AS1692: *Steel tanks for flammable and combustible liquids*. Tanks will be equipped with leak detection and alarms as well as fuel metering and level monitoring with remote display.

2.2.3 Compliance History

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 power generation facility or bulk storage of chemicals.

2.3 Part IV of the EP Act

The West Musgrave Project was referred to the EPA in October 2020 under section 38 of the EP Act. Ministerial Statement 1188 (MS 1188) was issued to Oz Minerals Musgrave Operations Pty Ltd (Oz Minerals) on 20 April 2022. The proposal includes the development of two copper and nickel deposits (Babel pit and Nebo pit), a processing facility and supporting infrastructure, within the West Musgrave Ranges of Western Australia

The EPA assessed the risks of the proposal associated with the environmental factors below:

- Greenhouse Gas Emissions
- Social Surroundings
- Flora and Vegetation
- Terrestrial Fauna
- Inland Waters

Relevant to the Part V assessment, conditions of MS 1188 include the authorisation of a power supply of up to 60MW of fossil fuel generated electricity per annual period. With the addition of the temporary power plant, an instantaneous load capacity could exceed 60MW, though it is noted that both are not likely to operate simultaneously.

Advice obtained the department's EPA Services branch indicated that while the application and proposed changes are generally consistent with MS 1188, the net emissions associated with the proposal (total emissions minus reductions through improved technology, reduced operations or offsets) are required to be met under the Ministerial Statement regardless of changes to emissions rates and thus the proponent cannot change the net GHG emissions from implementation of the proposal.

The applicant has committed to maintaining an instantaneous load capacity below 60MW during periods where both the temporary and permanent electricity generation facilities run simultaneously.

Key findings: The delegated officer has considered the above information relating to matters regulated by MS1188 and determined that:

- MS1188 requires the works approval holder to manage greenhouse gas emissions from the proposal, including net emissions rates.
- It is the responsibility of the works approval holder to ensure that activities and emissions associated with the temporary and permanent power supply at the premises (including net greenhouse gas emissions) are managed to meet the requirements of MS1188.
- The works approval will have consideration for the management of both the permanent and temporary power supply.

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 construction and operation which have been considered in this Amendment Report are detailed in Table 2 below. Table 2 also details the proposed control measures the Works Approval Holder has proposed to assist in controlling these emissions, where necessary.

Table 2: Works Approval Holder controls

Emission	Sources	Potential pathways	Proposed controls
Dust	Category 52: electric power generation	Air/windborne pathway causing impacts to health and amenity	Dust managed by watering exposed areas with a water cart or with fixed sprays as required.
Noise	Category 73: Bulk storage of chemicals	amonky	Equipment design specified to be compliant with relevant Australian Standard noise criteria
Air emissions (NOx, CO, SOx, VOCs, PM)			No proposed controls due to no nearby sensitive receptors. Greenhouse Gas Emissions managed as per the conditions of the EPA Part IV approval.
Spills and leaks of hydrocarbons	Category 73: Bulk storage of chemicals	Overland runoff from site, causing adverse health impacts to downgradient native vegetation and local ecosystems.	Hazardous materials stored and handled in accordance with AS 1940, AS 3833 or AS 3780, the Dangerous Goods Safety Act, 2004 (WA), any conditions identified as part of EP Act Part V licensing or associated regulations.
		Seepage / infiltration causing groundwater contamination.	Refueling and fuel delivery inlets located on concrete or HDPE-lined pads to contain any drips or spills and draining to a sump to allow removal of collected material.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Works Approval 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 prescribed activity
Closest residential receptor	The nearest residential receptor lives in the community of Jameson (Mantamaru), approximately 26 km north of proposed prescribed activities.
Visitors to cultural	Registered Heritage site located ~6km NNE (ID2888)

heritage locations	Previous WA amendment (Amend 2) suggests there are unregistered sites scattered throughout the premises (refer to response to RFI A2174125)
Groundwater bores	The premises is not located within any public drinking water source area (PDWSA). Groundwater bores used by the nearest community, Jameson (Mantamaru) are located 26km north of the mine. Linton bore, which is used from time to time by the community when visiting the area for cultural activities, is located approximately 5km south-west of the most southern production bore of the Northern Borefield.
Environmental receptors	Distance from prescribed activity
Surface waters	There are no ephemeral surface waters within 500m of prescribed premises activities.
Groundwater	Depth to groundwater ranges between 2.7 and 14.5 metres below ground level (mbgl) sitting at a site-wide average water level of 6.5 mbgl.
	Groundwater measured at the landfill site is 4.1 – 4.5 mbgl.
	Groundwater has a steady gradient of approximately 0.1% running north to south across the TSF.
	Salinity ranges from marginal to brackish (920 to 4,500 mg/L total dissolved solids (TDS)) and is variable across the project area.
	Slightly alkaline pH (7.5 – 8.5)
Groundwater dependent receptors	The shallow paleochannel aquifer (Kadgo palaeochannel) is known to contain stygofauna, and these organisms are considered to be the most sensitive environmental receptors to changes in the groundwater regime that would be caused by mining activities at the site.
	This paleodrainage system is within the area of impact of TSF seepage.
Native vegetation	No TECs, or PECs were identified within 100km of the premises.
, and the second	No Threatened flora as listed under the <i>Environment Protection and Biodiversity Conservation Act, 1999</i> (Cth) (EPBC Act) or <i>Biodiversity Conservation Act, 2016</i> (WA) (BC Act) were recorded.
	Shallow rooted understorey species where roots are within the upper 1 to 2 m of the soil profile comprise the dominant flora taxa within the TSF footprint and immediate surrounds. There exists a small patch of deeper-rooted groundwater dependent vegetation to the southeast of the TSF that could be susceptible to longer term changes to water quality.
	Vegetation associations, including terrestrial groundwater dependent ecosystems (GDEs), are considered to be widespread and well represented in the region.
Terrestrial fauna	Eleven fauna habitats were identified during fauna surveys.
	Fifteen species of significant fauna were identified across the survey area, including:
	one vulnerable species under the BC Act and EPBC Act (great desert skink)
	six species listed under the EPBC Act were listed as Marine of which one is also listed as Migratory under the BC Act and EPBC Act
	three Specially Protected (Priority 4) species under the BC Act
	a single locally significant species, not listed under the BC Act or EPBC

Act; and

• four species observed that represent range extensions (however not listed under EPBC or BC Act).

No Threatened flora, as listed under the EPBC or BC Acts were recorded. However, the night parrot, listed as endangered and critically endangered under the EPBC Act and BC Act respectively, was identified as potentially occurring within the project extent.

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 Works Approval 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 Works Approval Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the Works Approval 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 Works Approval W6579 that accompanies this Amendment Report authorises construction and time-limited operations. The conditions in the Revised Works Approval have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the Premises i.e. temporary power supply and bulk storage of chemicals. A risk assessment for the operational phase has been included in this Amendment Report, however licence conditions will not be finalised until the department assesses the licence application.

Table 4. Risk assessment of potential emissions & discharges from the Premises during construction, commissioning, & operation

Risk Event	Risk Event							
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	Risk rating ¹ C = consequence L = likelihood	Reasoning	Regulatory controls	
Construction	Construction							
Construction of the temporary	Dust	Air/windborne pathway causing impacts to health and	Nearest residential receptors approximately 26	Refer to Table 3	C = Minor L = Rare Low Risk	No nearby sensitive receptors, noting that impacts to visitors at nearby heritage sites are regulated under MS 1188. Nearby vegetation expected to be resilient to the levels of dust generated by earthworks associated with the construction of the temporary power plant. Nearby vegetation expected to be well represented in the region.	No additional conditions for the management of dust during construction.	
power plant and fuel storage facilities	Noise	No pathway to	Adjacent	Refer to Table 3	C = Slight L = Rare Low Risk	No nearby sensitive receptors, noting that impacts to visitors at nearby heritage sites are regulated under MS 1188.	No additional conditions for the management of noise during construction. Applicant will be required to construct infrastructure as specified in the application for the purpose of managing noise impacts during commissioning and operation.	
Commissioning and operation (including time limited operations)								
Category 52: Electric power generation	Noise	Air/windborne pathway causing impacts to health and amenity	Nearest residential receptors approximately 26 km to the north.	Refer to Table 3	C = Slight L = Rare Low Risk	No nearby sensitive receptors, noting that impacts to visitors at nearby heritage sites are regulated under MS 1188. Each generator is located within and individual enclosure with the addition of noise treatment.	No additional conditions for the management of noise during commissioning and operation.	

Risk Event	Risk Event						
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	Risk rating ¹ C = consequence L = likelihood	Reasoning	Regulatory controls
Category 52:	Spills or leaks of hydrocarbons	Overland runoff from site, causing adverse health impacts to downgradient native vegetation and local ecosystems. Seepage / infiltration causing groundwater contamination.	Adjacent vegetation associations. Groundwater dependent ecosystems. Depth to groundwater approximately 6.5 mbgl. No human groundwater users in the area.	Refer to Table 3	C = Slight L =Unlikely Low Risk	Proposed controls are consistent with existing commitments. There are no nearby sensitive receptors – the premises is not near public drinking water source or defined surface waters. If spills were to occur, they would likely be minor and highly localized.	No additional conditions required for the commissioning and operation of the temporary power generation plant.
Electric power generation	Air emissions (NOx, CO, SOx, VOCs, PM)	No pathway to residential receptors. Air/windborne pathway to cultural heritage sites resulting in amenity impacts.	Nearest residential receptors approximately 26 km to the north. Registered cultural heritage sites located greater than 5km. Visitors to heritage sites	Refer to Table 3	C = Slight L = Rare Low Risk	No reasonable pathway to residential receptors or cultural heritage locations due to distance. Impacts to visitor amenity at nearby heritage sites will be managed through Part IV Ministerial conditions. The delegated officer considers that the implementation of emission specifications on the works approval are not required due to the distance to receptors. Greenhouse gas emissions regulated under MS 1188, including a Greenhouse Gas Management Plan.	Consistent with Part IV commitments. To ensure the operation of the temporary and permanent power supply does not exceed approved limits, the Works Approval includes a condition to ensure that the instantaneous load capacity of 60MW is not exceeded, including when both the temporary and permanent power plants run simultaneously.

Risk Event					Risk rating ¹		
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood	Reasoning	Regulatory controls
Category 73: Bulk storage of chemicals	Spills or leaks of hydrocarbons	Overland runoff from site, causing adverse health impacts to downgradient native vegetation and local ecosystems. Seepage / infiltration causing groundwater contamination.	Adjacent vegetation associations. Toxicological impacts to groundwater dependent ecosystems. Depth to groundwater approximately within 6.5 mbgl. No human groundwater users in the area.	Refer to Table 3	C = Minor L = Unlikely Medium Risk	Proposed controls are consistent with existing commitments and controls within the works approval.	No additional conditions required.

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

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

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
The Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) provided comment on	DEMIRS approved a revised Mining Proposal (REG ID 121362) for the West Musgrave Project on 24 January 2024. The Mining Proposal approved changes to the following aspects:	Noted.
the proposed amendment on 10 April 2024	 Minor change to TSF location and shape; basic design aspects remain the same; 	
	 Minor changes to Mineral Processing Plant (MPP) location and operational aspects, reduction in total footprint; 	
	 Changes to power plant details and addition of a temporary power plant; 	
	 Further detail on miscellaneous supporting infrastructure; 	
	 Updated baseline information based on the recent environmental and heritage survey information; 	
	Revision of the environmental risk assessment and environmental outcomes with some minor modifications; and	
	Update to the Environmental Management System (EMS) system to reflect the current construction EMS in place.	
The applicant was provided the draft amendment report and draft works approval on 14/06/2024 and responded on 05/07/2024	Refer to Appendix 1	Refer to Appendix 1

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Works Approval 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 Revised Works Approval as part of the amendment process.

Table 6: Summary of works approval amendments

Condition no.	Proposed amendments
Table 1	Updated infrastructure locations to new figure specifications
	Updated permanent thermal electricity generation plant maximum output and number of generators
	 Addition of temporary thermal electricity generation plant and associated design, construction and installation requirements
	Removal of WWTP, Concrete Batch Plant, Landfill and Screening infrastructure
Table 2	Updated infrastructure locations to new figure specifications
	Updated permanent fuel storage requirements
	 Addition of fuel storage and delivery areas, NPI logistics yard, MPP fuel storage, and Mobile fuel storage
	Updated storage holding capacities
Table 3	Updated figure numbers
Table 4	Addition of temporary thermal electricity generation plant and associated commissioning
	Removal of WWTP commissioning
	Updated commissioning period for permanent fuel storage
	Addition of temporary fuel storage
Condition 13, Table 6	Updated infrastructure locations to new figure specifications
	Addition of temporary thermal electricity generation plant discharge points
	Removal of irrigation field
Condition 14, Table 7 Condition 15	Removal of WWTP and irrigation field monitoring requirement's during commissioning
Condition 19, Table 8	Updated infrastructure locations to new figure specifications
	 Addition of Permanent and Temporary thermal electricity generation plant requirements during TLO
	Removal of WWTP requirements
Condition 20, Table 9	Removal of irrigation field discharge point during TLO
	Addition of temporary thermal electricity generation plant discharge point during TLO
Condition 23	Additional condition to ensure 60MW limit not exceeded
Condition 24, Table 10	Removal of WWTP monitoring during TLO
Table 11	Updated figure numbers
Condition 27	
Condition 29	
Definitions	Removal of WWTP
	Addition of MPP – Mineral Processing Plant
Schedule 1	Updated premises maps
	Removal of WWTP, CBP and landfill figures
	Addition of updated permanent power generation facility figure
	Addition of Temporary power generation facility figure

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.

Appendix 1: Summary of Works Approval Holder's comments on risk assessment and draft conditions

Condition	Summary of Works Approval Holder's comment	Department's response
Premises categories, Table 1 row 6 and 12	The applicant requested updates to the nominated throughput for Category 12 screening, and minor changes to the specified dimensions of the premises landfill to reflect the corresponding licence application and compliance reports.	The delegated officer notes that these requested changes are under consideration as part of the concurrent licence amendment application. Noting this, and recognising that the licence will authorise the ongoing operation the premiss landfill and screening plant (as opposed to time limited operations under the works approval), the requested changes are not considered appropriate for inclusion in the works approval, but rather will be included on the premises licence.
Table 1, row 7	Minor changes to permanent power plant including alternate engine generator identified as Caterpillar C175-20 or equivalent, and sized to 3 MWe each	Accepted
Table 2, row 4	Changes to the breakdown of chemical storage in Table 2; separating aviation fuel and accommodation village fuel storage to their own lines, minor name changes	Accepted
Table 2, row 4	Addition of 1x diesel tank at the accommodation village fuel storage area. Will increase infrastructure to be 3 diesel generators at 67kL each, totalling 201kL and increasing the categories assessed capacity to 8901 m³ in aggregate.	Accepted