

Amendment Report

Application for Works Approval Amendment

Part V Division 3 of the Environmental Protection Act 1986

Works Approval Number	W6008/2016/1
Works Approval Holder	Mt Morgans WA Mining PTY LTD
ACN	612 053 291
File Number	DER2016/002021-1
Premises	Mt Morgans Gold Project
	Mining tenements M39/236, M39/395, M39/390, M39/272, M39/18, M39/228, M39/264, M39/304, M39/240, M39/248, L39/245, L39/246, M39/441, M39/250, M39/504, M39/745, M39/403, M39/282, M39/36 and M39/110
	LAVERTON WA 6440
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	as depicted in Schedule 1 of the works approval
Date of Report	28 October 2021

A/MANAGER, RESOURCE INDUSTRIES REGULATORY SERVICES

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

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1. Decision summary

Works Approval W6008/2016/1 is held by Mt Morgans WA Mining Pty Ltd (Works Approval Holder) for the Mt Morgans Gold Project (the Premises), located at Mining tenements M39/236, M39/395, M39/390, M39/272, M39/18, M39/228, M39/264, M39/304, M39/240, M39/248, L39/245, L39/246, M39/441, M39/250, M39/504, M39/745, M39/403, M39/282, M39/36 and M39/110, Laverton WA 6440.

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 W6008/2016/1 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 23 June 2021, the Works Approval Holder submitted an application to the department to amend Works Approval W6008/2016/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

• Alteration to the arrangement of spigots as detailed in the infrastructure table for Cell 1 and Cell 2 of the tailings storage facility (TSF).

The DWER initiated amendment of the addition of limited time operation conditions are also included in this amendment to allow for better transition between construction under the works approval and operation under the Licence L9010/2016/1.

This amendment is to reflect the changes to design of the original spigotting arrangement of the TSF as assessed in 2016. The management of the tailings beach and decant water pond has necessitated the alteration from 36m spacing to 24m spacing between spigots. The northern walls of the TSF cells follow the contours of a hill and the lifts raise the level of the deposition to where the contour of the hill becomes more pronounced. This area includes the north eastern corner of Cell 1 where the topography of the hillside abutted by the TSF requires two movable single discharge points to be used. The topography of Cell 2 is likely to require similar adjustments to the positioning of spigots.

The amendment to the works approval will not alter the risks as previously assessed for the construction of future lifts but it is an alteration of emission discharge points as detailed in the works approval. The environmental risks of operating the TSF with the amended spigot arrangement in TSF Cell 1 was assessed in the licence amendment report dated 18 October 2021.

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 1 below. Table 1 also details the proposed control measures the Works Approval Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Works	Approval	Holder controls
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Emission	Sources	Potential pathways	Proposed controls				
Operation of	of TSF						
Leachate Deposition of tailings into TSF Cell 1 Seepage through ground Seepage through ground Seepage recovery system (Figure 1) that includes: • Interception sumps - eight sumps installed along the nor south-eastern side of Cell 1. Five of the sumps are curr seepage affected groundwater that enter the sumps. To pumps are operated manually, and pumps are run inter accumulate on the playa lake surface (TSF SP04 and T						provided with a surface pump to remove mps run more-or-less continuously, while 3 ntly mainly to remove water that might	
			Table 2: Pumping of				
			Sump	Easting*	Northing*	Notes	
			TSF SP01	422,791	6,814,896	Sump dry	
			TSF SP02	422,879	6,814,877	Pump runs continuously at 50 kL/hr	
			TSF SP03	423,014	6,814,707	Sump dry	
			TSF SP03A	423,069	6,814,647	Pump runs continuously	
			TSF SP04	422,626	6,813,821	Pump runs intermittently to remove surface water from playa lake surface	
			TSF SP05	422,368	6,813,601	Pump runs intermittently to remove surface water from playa lake surface	
			TSF SP06	422,018	6,813,382	Mobile pump used when required	
			TSF SP07	421,950	6,813,462	Pump runs intermittently	
			 trigger levels are add L9010/2016/1 condit Alteration of the spig cell rather than the 3 beaching control. 	litional to the trigger a on 3.5.1 ot arrangement. The 6m initially proposed	and limit levels set on r spigots are spaced at in the design. This will	trigger levels for recovery actions. These nonitoring bore TSF MB1 by the licence 24m intervals around the perimeter of the T allow for better tailings deposition and the hill extends into the cell, has the spigot	

Emission	Sources	Potential pathways	Proposed controls
			of perimeter spigots. This is to facilitate the ease of spigot installation as the current configuration would result in multiple bends in the main distribution pipeline. This would be difficult to install and will decrease efficiency of the hydraulic system. The two movable single point discharge system is ideal for the location as the licence holder is able to move the tailings discharge system within the two corridors on either side of the hill as required. The different technique will also not compromise the stability of the TSF as the two single point discharge would be situated on natural surface, not on the constructed embankment (i.e. future upstream raising of an embankment is not required). As per the extract from the 'as constructed' diagram for the TSF Cell 1 raise.
			A relevant snipped portion of the spigotting diagram shows the new arrangement of spigots (pink lines) in the northeastern corner of Cell 1. The scribbled red line is the length of spigotting previously planned but was found to include multiple bends making installation difficult and decreasing hydraulic system efficiency.
			24m spigot spacing not required SLURRY SPIGOTS AT 24m CENTRES 408.5 Reuse Victaulic spools and spigots (24m) VVP1 VVP1 VVP1
			It is anticipated that there may be a similar solution required for TSF Cell 2 in future raises.

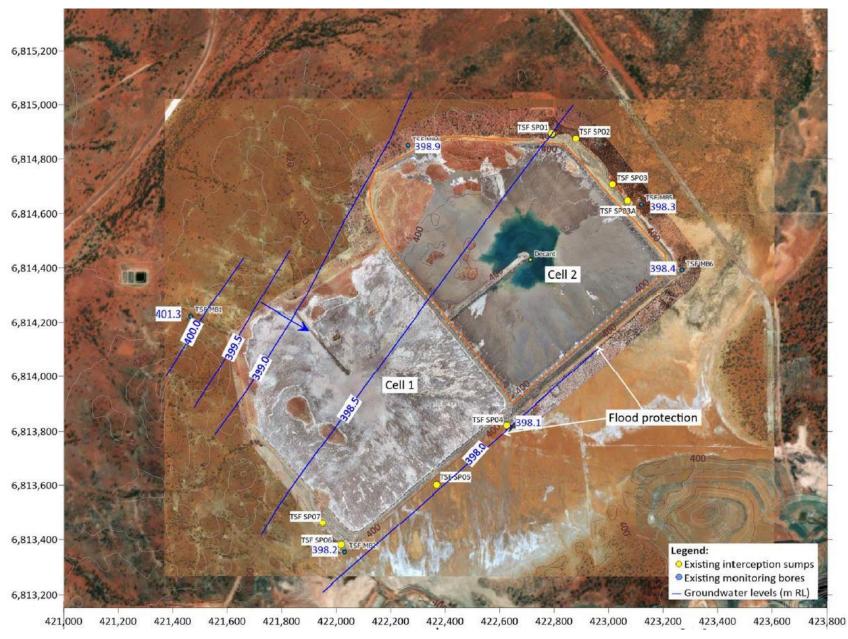


Figure 1: Position of existing and proposed monitoring and seepage infrastructure

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 activity / prescribed premises
Mount Margaret Community	1 km west of the north-western corner of Cell 1
Environmental receptors	Distance from activity / prescribed premises
Threatened Ecological Community:	Approximately 600m to the northwest of the TSF.
Mount Morgan calcrete groundwater assemblage (P1)	The potential for the groundwater mound, due to discharge of tailings to the TSF, to impact the calcrete aquifer was assessed during previous amendments to the licence (L9010/2016/1) and works approval. The aquifer is positioned approximately 600m to the northwest and the spread of the groundwater mound was calculated to be approximately 180m after a 10 year period. The groundwater mound is therefore not expected to impact the calcrete aquifer.
Underlying groundwater (non-potable purposes)	Background groundwater elevations (prior to tailings deposition) ranged between very shallow at the playa with groundwater depths of less than 0.5 m from ground surface at TSF MB2 and TSF MB3, to 9.3 m and 5.5 m at TSF MB1 and TSF MB4 respectively with monitoring bores between the playa and upgradient monitoring bores about 2 m depth.
	Since tailings deposition started, groundwater levels at TSF MB2 and TSF MB3 have increased to close to the ground surface with groundwater expressions occurring in places. However, since the TSF seepage interception system was installed, groundwater levels were lowered and is currently at 0.38 and 0.19 m below ground surface for TSF MB2 and TSF MB3 respectively.
	The quality of groundwater ranged from 150,000 mg/L TDS and 180,00 mg/L at the playa to 5,800mg/L to the north west corner of Cell 1 (TSFMB1). Since deposition the TDS has fluctuated widely in the bores with low salinity increasing to hypersaline but dropping after deposition in Cell 1 ceased prior to the works approval Stage 8 lift.
	Cyanide has also been detected in some bores due to contamination with seepage from the TSF.
Lake Carey	A playa connected the main Lake Carey playa is immediately adjacent to the TSF
Tecticornia cymbiformis (Priority 3)	Approximately 1.3 km west of the north western corner of Cell 1 of the TSF)

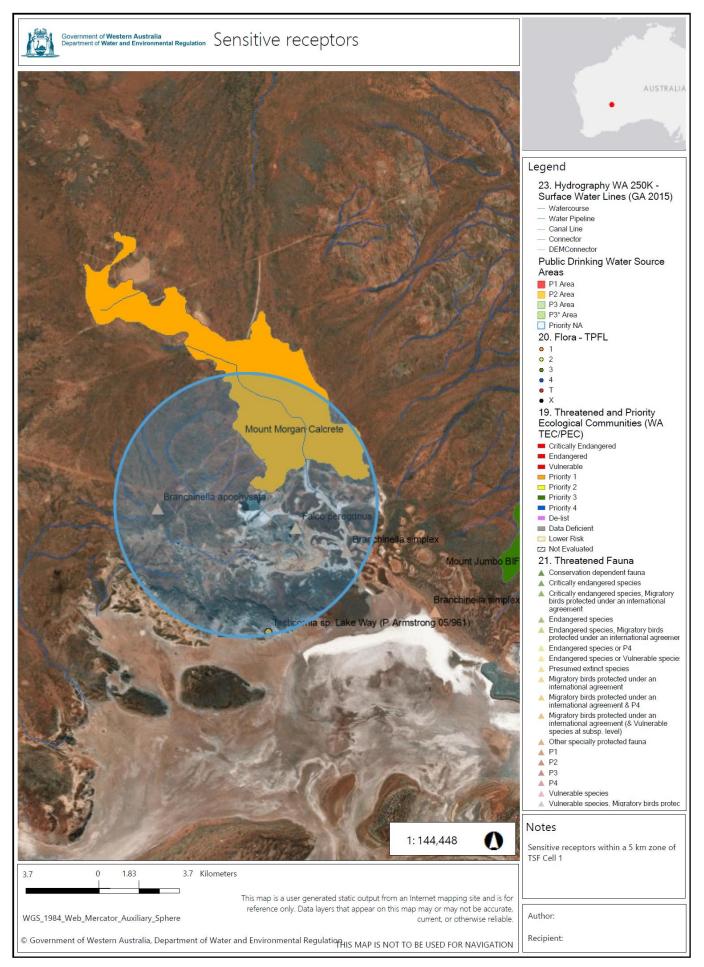


Figure 2: Distance to sensitive receptors of TSF

Works Approval: W6008/2016/1

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

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 W6008/2016/1 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. Category 5 activities. 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.

Risk Event					Risk rating ¹	Works		
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls	C = consequence L = likelihood	Approval Holder's controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Operation (including tin	ne-limited-ope	rations operation	s)					
Tailings disposal to Cell 1	Leachate	Seepage through ground causing groundwater mounding and impacting quality of surrounding groundwater	Vegetation – non-priority Groundwater	Refer to Section 3.1	C = Moderate L = Almost certain High Risk	Ν	Current conditions 1.2.2, Table 1.2.1 The infrastructure requirements table amended to include the specification: <i>Multiple rotating spigots</i> to be installed around the perimeter of Cell 1 and Cell 2 embankments and spaced approximately 24 m apart except where natural surface embankments impede spigot spacing. Where natural surface embankments impede spigot spacing spigots will be spaced appropriately to accommodate for the terrain. <u>Time limited operation</u> <u>conditions</u>	The time limited operation conditions have been added to the licence so that the operation of a TSF cell may proceed after commissioning whilst the amendment of the licence proceeds. By operating under the works approval for a limited time the compliance reporting can be fully assessed with the information regarding the performance of the seepage recovery system before issuing a licence and without the risk of the works approval holder having to discharge to the newly raised cell prior to the licence being amended to authorise it.

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. The details of the changes to the spigot arrangement around the TSF was assessed as part of a licence amendment application for L9010/2016/1. Opportunity to comment on these changes was provided to the Shire of Laverton and the Department of Mines, Industry Regulation and Safety at that time.

Table 5: Consultation

Consultation method	Comments received	Department response
Works Approval Holder was provided with draft amendment on (22/10/2021)	Comments and waiver of 21 days received 26/10/2021. Throughput of Category 5 on works approval questioned as it remains at 2.5 million tonnes per annual period whilst licence has the Category 5 throughput as 3.5 million tonnes per annual period.	The works approval will be amended to have a Category 5 throughput of 3.5 million tonnes per annual period making it consistent with the licence and allowing for the limited time operations under the works approval.

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.

Condition no.	Proposed amendments
1.2.2, Table 1.2.1	Replace spigot arrangement with new spigot arrangement.
1.3.1 – 1.3.3 and Table 1.3.1	Conditions providing for time limited operations of infrastructure to allowing for operation whilst applying for amendment to the licence.
2.2.1 and Table 2.2.1	Discharge points for limited time operations
Table 4.2.1	Numbering of table corrected
Maps	The maps were numbered to be clearly referenced by licence conditions. Figure 2, showing the position monitoring bores, was updated with a figure with clearer labelling of the bores Figure 3 was added to be a clearer reference for infrastructure listed in Table 1.3.1 and Table 2.2.1

Table 6: Summary of works approval amendments

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.
- 4. Groundwater Resource Management 2021, Updated groundwater management plan: Mt Morgans tailings storage facility, Bayswater, Western Australia

Appendix 1: Application validation summary

Application type						
Works approval						
Licence		Relevant works approval number:		None		
		Has the works approval been complied with?		Yes □	No 🗆	
		Has time limited operations under the works approval demonstrated acceptable operations?		Yes □	No 🗆 N/A 🗆	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?		Yes □	No 🗆	
		Date Report received:				
Renewal		Current licence number:				
Amendment to works approval	\boxtimes	Current works approval number:	W6008/2016/1			
Amendment to licence		Current licence number:				
		Relevant works approval number:		N/A		
Registration		Current works approval number:		None		
Date application received		23/06/2021				
Applicant and Premises details						
Applicant name/s (full legal name/s	6)	Mt Morgans WA Mining PTY LTD				
Premises name		Mt Morgans Gold Project				
Premises location		As covered by the works approval: Mining tenements M39/236, M39/395, M39/390, M39/272, M39/18, M39/228, M39/264, M39/304, M39/240, M39/248, L39/245, L39/246, M39/441, M39/250, M39/504, M39/745, M39/403, M39/282, M39/36 and M39/110. M39/395 and M39/236 are the tenements relevant to this amendment.				
Local Government Authority		Shire of Laverton				
Application documents						
HPCM file reference number:		DER2016/002021-1~3				
Key application documents (additional to application form):		Works Approval W6008/2016/1 Amendment Application Category 5: TSF Infrastructure Amendment – supporting document				
		Note: supporting documents of the related licence amendment application to add the recently increased height of Cell 1 are also relevant to this application.				

Scope of application/assessment		
	Alteration to the arrangement of spigots as detailed in the infrastructure table for Cell 1 and Cell 2 of the TSF.	
Summary of proposed activities or changes to existing operations.	Multiple rotating spigots to be installed around the perimeter of each Cell 1 and Cell 2, spaced approximately 24 m apart for the slurry to be discharged through. The exception will be for the north-east corner of TSF Cell 1 where two movable single discharge points will be installed.	

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

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 5: Processing or beneficiation of metallic or non- metallic ore	2.5 million tonnes per annual period	N/A
Category 6: Mine dewatering	1.2 million tonnes per annual period	N/A
Category 54: Sewage facility	145.5 kL per day	N/A
Category 64: Class II putrescible landfill	4 500 tonnes per annual period	N/A
Category 73: Bulk storage of chemicals	1 150 kL capacity	N/A

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 □ No ⊠	Referral decision No: Managed under Part V □ Assessed under Part IV □
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes 🗆 No 🖂	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes 🗆 No 🖂	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes 🛛 No 🗆	Mining lease / tenement ⊠ Expiry: M 39/395 Expires 17/01/2029 M 39/236 Expires 16/12/2032
Has the applicant obtained all relevant planning approvals?	Yes □ No □ N/A ⊠	Approval: Expiry date: If N/A explain why? Mining tenure

[
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes 🗆 No 🖂	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 🗆 No 🖂	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 🗆 No 🖂	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 ⊠ No □	Name: Goldfields Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes □ No ⊠ N/A □ Regional office: Goldfields
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes □ No ⊠	Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to <u>WQPN 25</u>)? Yes I No I N/A I
Is the Premises subject to any other Acts or subsidiary regulations (e.g. Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx)	Yes 🛛 No 🗆	Mining Act 1978
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes □ No ⊠	
Is the Premises subject to any EPP requirements?	Yes □ No ⊠	
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes ⊠ No □	Classification: Awaiting classification Date of classification: N/A