



## Application for Works Approval Amendment

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

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<b>Works Approval Number</b>	W6526/2021/1
<b>Works Approval Holder</b>	Murrin Murrin Operations Pty Ltd
<b>ACN</b>	076 717 505
<b>File Number</b>	DER2021/000132-1
<b>Premises</b>	Murrin Murrin North Murrin Murrin Nickel Cobalt Project  Legal description –  Mining tenements M39/342, M39/343, M39/421, M39/424, M39/553  Shire of Leonora and Shire of Laverton  As defined by the coordinates in Schedule 2 of the Revised Works Approval
<b>Date of Report</b>	20 April 2023
<b>Decision</b>	Revised works approval granted

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**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 W6526/2021/1 is held by Murrin Murrin Operations Pty Ltd (Works Approval Holder) for the Murrin Murrin Nickel Cobalt Project (the Premises), located at mining tenements M39/342, M39/343, M39/421, M39/424, and M39/553 in the Shire of Leonora and Shire of Laverton.

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 W6526 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 Background to the application

Works Approval W6526/2021/1 was issued on 26 July 2021 to allow for the construction of pipework and associated infrastructure to operate 17 Series Pit as an In-pit TSF. The original application for W6526 proposed that Stage 1 would consist of tailing deposition from four sets of multiple spigots on the eastern side of the pit and decant would be recovered from the western side of the pit. Once the floor of the in-pit TSF was completely full and all low points filled, Stage 2 would commence where tailings would be discharged from the northern end of the pit and the most southern decant point would be used for supernatant recovery.

### 2.3 Application summary

On 21 October 2022, the Works Approval Holder applied to the department to amend Works Approval W6526 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

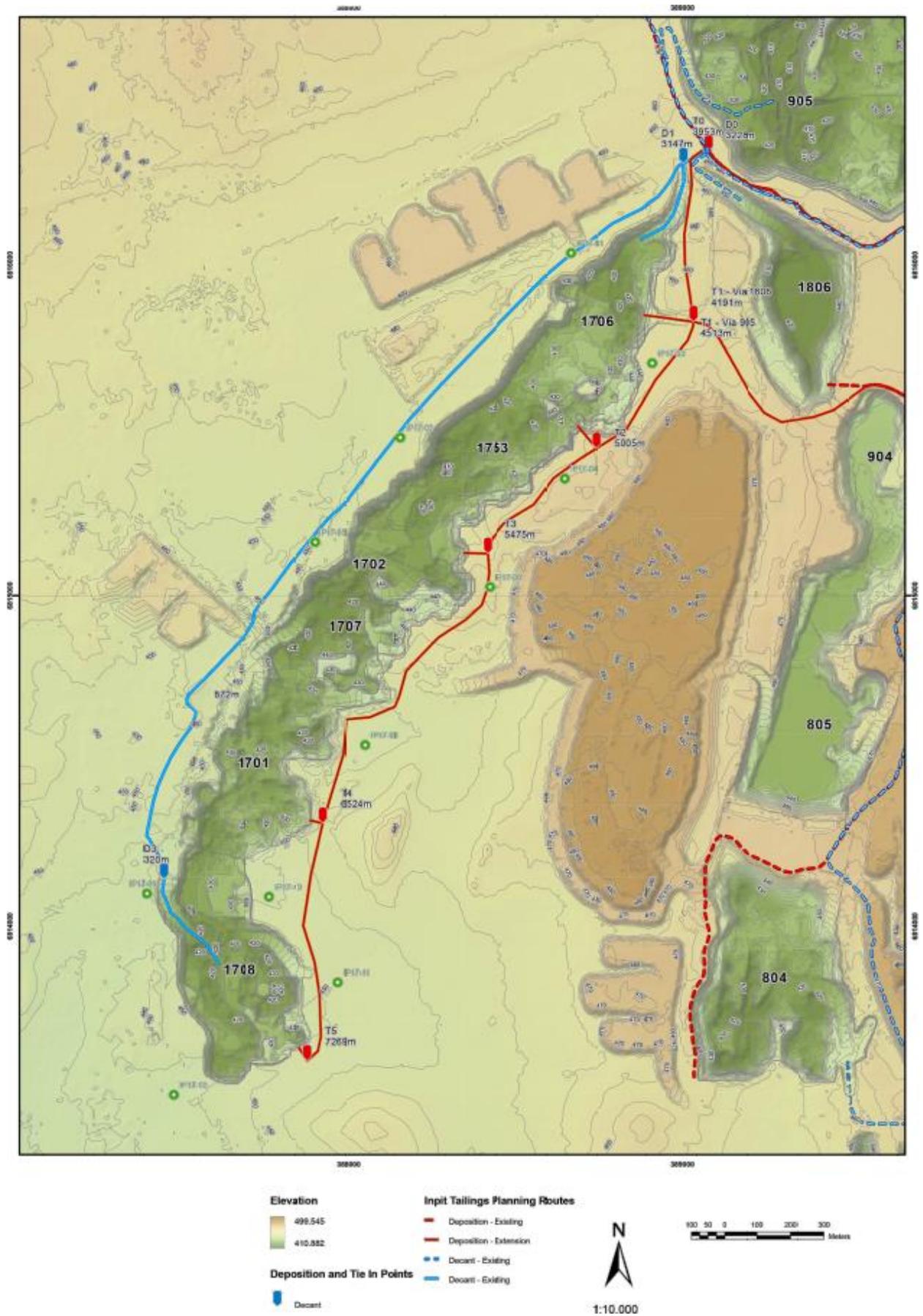
- The Works Approval Holder propose to amend Stage 3 of the Works Approval as the supernatant pond has moved to the southern end of the pit sooner than anticipated.
  - The Works Approval Holder propose to install decant point D3 during Stage 2, and not install decant point D2 as it is no longer required.
  - The construction / installation of the decant pipeline and bunding will be longer to D3 (approximately 3.9 km) than to D2 (3 km).
  - No installation of decant infrastructure to occur during Stage 3
- In addition, the Works Approval Holder propose to install discharge point T0 in Stage 4 to ensure even tailing discharge and beach development.
  - Additional tailings pipeline and bunding of approximately 500 m will be required to the T0 location at northern point of TSF.

There will remain four stages in the life of the in-pit TSF, but Stage 4 will now include the installation of one additional discharge point (as above), whereas previously Stage 4 did not involve any works, only a change to discharge and decant recovery locations.

Table 1 below outlines the proposed changes to the existing Works Approval.

**Table 1: Proposed design capacity changes**

<b>Category</b>	<b>Current design capacity</b>	<b>Proposed design capacity</b>	<b>Description of proposed amendment</b>
5	5,000,000 tonnes per annum	No change	Change to deposition of tailing, no change to throughput or change to the risk to environment is proposed.



**Figure 1: Proposed pipeline and discharge points to 17 Series In-pit TSF**

### 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.

The proposed change will not result in any change to the overall deposition and decant recovery strategy for the in-pit TSF (as detailed in the original Works Approval and Decision Report for W6526/2021/1). The Works Approval Holder is not expecting any changes to the scale or nature of the environmental impact associated with tailings discharge.

#### 3.1 Source-pathways and receptors

##### 3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction 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
Tailings	Deposition of tailings into in-pit TSF	Direct infiltration of tailings seepage	Existing controls as conditions in W6526/2021/1. No additional controls were proposed by the Works Approval Holder.
		Overtopping of in-pit TSF	Existing controls as conditions in W6526/2021/1. No additional controls were proposed by the Works Approval Holder.
	Pipeline breakage of leakage	Direct infiltration of tailings of decant water seepage into the soil	Daily pipeline inspection in accordance with existing licence L7276/1996/12 Existing controls as conditions in W6526/2021/1 No additional controls were proposed by the Works Approval Holder.

##### 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 because 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
Town of Leonora	50 km west of the premises  The Delegated Officer considers it unlikely a risk event for emissions will occur as a source pathway receptors linkage does not exist based on the distance from proposed activities.  Therefore, this receptor is not further considered in the risk assessment table below.
Environmental receptors	Distance from prescribed activity
Groundwater	<i>Rights in Water and Irrigation Act 1914</i> proclaimed groundwater area. Premises located within Goldfields Groundwater area
Surrounding vegetation	Priority flora within the area of proposed works: <ul style="list-style-type: none"> <li>• Hybanthus floribundus subsp. chloroxanthus (Priority 3)</li> <li>• Hemigenia exilis (Priority 4)</li> <li>• Acacia websteri (Priority 1)</li> <li>• Hibiscus krichauffianus (Priority 3)</li> </ul>

### 3.1.3 Previous assessment of W6526/2021/1

Mining from the existing 17 Series pits has been completed and the pits were converted into in-pit TSFs, which will receive approximately 15 Mt of tailings resulting from the extraction of nickel and cobalt from the ore.

The pits are confined within the weathered (saprolite unit) which has an estimated hydraulic conductivity of  $2 \times 10^{-8}$  m/s. Current operations involves deposition of tailings into an above ground TSF as well as several in-pit TSFs which are located immediately east of the 17 Series In-pit TSFs.

Tailings seepage characterization was previously assessed and defined as clayey silt in nature and hypersaline (TDS approximately 180,000 mg/L), with a pH of 2.3 and elevated concentrations of Fe, Mg, Mn and Ni. No sulphide material is present in the tailings, reducing the risk of acidic drainage from the tailings.

Time limited operations authorised by W6526/2021/1 commenced on 16 May 2022 with the submission of the Environmental Commissioning Report for Stage 1. Tailing deposition also commenced at this time for a total of 180 days, ceasing on 12 November 2022. During this time 4,843,663 m<sup>3</sup> of tailings were deposited into the 17 Series in-pit TSF.

Baseline groundwater monitoring commenced in November 2020 and show a slow decline in groundwater level. The Works Approval Holder believe this was due to groundwater abstraction to allow mining within the 17 Series pit during this time.

The current operating licence L7276/1996/12 for the premises sets out standing water level limits of > 4 mbgl for existing in-pit TSFs. The shallowest groundwater level in proximity to 17 Series In-pit TSF is currently 15.54 mbgl in monitoring bore IP17-09. The deepest is 33.34 mbgl in IP17-04.

Baseline water quality testing indicates marginal water quality at 9 of the 12 monitoring bores with total dissolved solids (TDS) ranging from 410 mg/L to 1,500 mg/L. Brackish water quality was recorded at the remaining three sites - 1,630 mg/L to 2,320 mg/L. Groundwater samples were slightly alkaline with laboratory pH ranging from 7.9 to 8.7 pH.

## 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 considers 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 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 W6526 that accompanies this Amendment Report authorises construction and time-limited operations (TLO). The conditions in the Revised Works Approval have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence amendment 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: Processing or beneficiation of metallic or non-metallic ore: premises on which tailings are discharged into a containment cell or dam. 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 and discharges from the Premises during construction, commissioning, and operation**

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions <sup>2</sup> of Works Approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
<b>Operation (including time-limited-operations operations)</b>								
Deposition of tailings into in-pit TSF	Tailing and process water	Tailings seepage resulting in direct subsurface infiltration and impacting groundwater quality and resulting in mounding and impacting vegetation	Groundwater, surrounding vegetation	Refer to Section 3.1.1	C = Moderate L = Likely <b>High Risk</b>	Y	Condition 1, 9, and 15	Groundwater monitoring conditions were added as additional regulatory controls in W6526. Conditions 15 and 16 remain relevant to manage the risk of tailing deposition into 17 Series In-pit TSF.
		Overtopping of in-pit TSFs resulting in direct infiltration of tailings subsurface and impacting groundwater quality and vegetation		Refer to Section 3.1.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	Condition 9	Deposition into 17 Series In-pit TSF commenced under TLO of W6526/2021/1 and compliance reporting show that all conditions were complied with.
		Pipeline breaks or leakages resulting in tailings infiltrating subsurface impacting groundwater quality and vegetation		Refer to Section 3.1.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	Condition 1, and condition 9	The Delegated Officer does not believe the proposed changes to the stage construction of pipeline to the in-pit TSF will significantly alter the risk to the environment.

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
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 20 March 2023	DMIRS replied on 12 April 2023 stating there was no objections to the amendment to the 17 Series In-pit TSF.  DMIRS advised that total tailings volume must not exceed 18.87 Mm <sup>3</sup> , as approved in Mining Proposal Reg ID 94424.	Comment noted.
Works Approval Holder was provided with draft amendment on 13 April 2023	Works Approval Holder responded on 14 April 2023, waiving the remainder of the comment period and requested the final instrument be issued as soon as possible.	N/A

## 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: Design and construction / installation requirements	Change of decant recovery point at Stage 2 from D2 (3,000 m of pipeline) to D3 (3,900 m of pipeline).  Addition of Stage 4 pipeline and deposition point T0 to the works approval
Table 2: Infrastructure and equipment requirement under time limited operations (TLO)	Changes to infrastructure design and construction requirements to include Stage 4
Figure 4	Update figure to show revised staged tailing deposition and decant water points and pipeline.
Table 5: GW monitoring of ambient concentration	Add in Stage 4 to ambient concentration frequency

## References

1. Murrin Murrin Operations Pty Ltd 2022, *W6526 Works Approval Amendment application form*, Perth, Western Australia
2. Minara Resources 2022, *W6526/2021/1 Works Approval Amendment Supporting Documentation*, Perth, Western Australia
3. Minara Resources 2023, *W6526/2021/1 17 Series In-pit TSF Time Limited Operations Report*, Perth, Western Australia
4. Department of Water and Environmental Regulation (DWER) 2021, *W6526/2021/1 Murrin Murrin Nickel Cobalt Project Works Approval Decision Report*, Joondalup, Western Australia
5. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
6. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
7. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.

## Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY			
<b>Application type</b>			
Amendment to works approval	<input checked="" type="checkbox"/>	Current works approval number:	W6526/2021/1
Date application received	21 October 2022		
<b>Applicant and Premises details</b>			
Applicant name/s (full legal name/s)	Murrin Murrin Operations Pty Ltd (076 717 505)		
Premises name	Murrin Murrin Nickel Cobalt Project		
Premises location	M39/342, M39/343, M39/553, M39/424, M39/421		
Local Government Authority	Shire of Leonora and Shire of Laverton		
<b>Application documents</b>			
HPCM file reference number:	DER2021/000132~1		
Key application documents (additional to application form):	<ul style="list-style-type: none"> <li>- Attach.1A – Mining Tenement Registers</li> <li>- Attach. 2 – Prescribed premises boundary</li> <li>- Attach. 3b                             <ul style="list-style-type: none"> <li>o Supporting doc = WA proposed amendment</li> <li>o Design change Report Letter &amp; updated design drawing of pipe work, discharge &amp; decant locations</li> </ul> </li> <li>- Attach. 5 – Letter regarding approval of Mining Proposal REG ID94424</li> </ul>		
<b>Scope of application/assessment</b>			

<p>Summary of proposed activities or changes to existing operations.</p>	<p><u>Proposed changes:</u></p> <ul style="list-style-type: none"> <li>• Amendment of Stage 2 and 3 → as supernatant pond has moved to the southern end of the pit sooner than anticipated – proposing to install decant point D3 during Stage 2 and not install D2 as no longer required. <ul style="list-style-type: none"> <li>○ Construction/installation of decant pipeline/ bunding will be approximately 3.9km in length to D3 location instead of 3km to D2.</li> <li>○ No installation of decant infrastructure to occur during Stage 3</li> </ul> </li> <li>• Additional Stage (4): which will include additional discharge location (T0) at very northern end of TSF – this will aim to evenly distribute the tailings on TSF surface with decant recovered at D3 (most southern decant location) <ul style="list-style-type: none"> <li>○ Additional tailings pipeline and bunding of approximately 500m to T0 location at northern point of TSF.</li> </ul> </li> </ul> <p><u>TLO:</u> Time-limited operations is requested to allow sufficient time for a licence amendment and for the implementation of 4 construction stages.</p> <p><u>Operations:</u> Discharge of tailings into 17 Series In-pit TSF – estimated operation timeframe until 2035.</p> <p>Stage 1: complete  Stage 2: 1 Jan 2023 (estimate)  Stage 3: 30 June 2023 (estimate)  Stage 4 (not authorised yet): 31 December 2023 (estimate)</p> <p><u>Throughput:</u>  Maximum production – 5 000 000 tonnes/year  Estimated production – 4 500 000 tonnes/year</p> <p><u>Clearing:</u> 0.6ha Will be done via raised blade clearing and to occur between Nov-Dec 2022. The purpose of this clearing will be for the pipeline corridor, bunding and scour sumps.</p>
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**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	5 000 000 tonnes per annum	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 <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: MS 506 EPA Report No: 931
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 checked="" type="checkbox"/> No <input type="checkbox"/>	Mining lease / tenement <input checked="" type="checkbox"/> Expiry: - M39/342 – 09/06/2039 - M39/343 – 09/06/2039 - M39/421 – 25/07/2038 - M39/424 – 06/09/2041 - M39/553 – 16/09/2041
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Approval: Expiry date: If N/A explain why? <i>Subject to Mining Act 1978</i>
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"/>	Clearing of 0.6ha to be undertaken under exemption authorised under the <i>Mining Act 1978</i> that allows clearing of up to 10 hectares per financial year per tenement.
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: Licence/permit No: <i>CAWS Act does not apply</i>
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: <i>Licence / permit not required.</i>
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Name: Goldfields Groundwater Area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Regional office: Goldfields

<p>Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Name: N/A  Priority: N/A  Are the proposed activities/ landuse compatible with the PDWSA (refer to <u>WQPN 25</u>)?  Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/></p>
<p>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>)</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p><i>Aboriginal Heritage Act 1972</i>  <i>Native Title Act 1993</i></p>
<p>Is the Premises within an Environmental Protection Policy (EPP) Area?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises subject to any EPP requirements?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input checked="" type="checkbox"/></p>	<p>Classification: <i>Area 700m west of TSF still awaiting classification</i></p>