Application for Works Approval

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

Works Approval Number	W6432/2020/1
Applicant	Evolution Mining (Mungari) Pty Ltd
ACN	002 124 745
File Number	DER2020/000362
Premises	Mungari Gold Mine (Cutters Ridge Project) Kundana Road Kalgoorlie WA 6430 Legal description - Part of Tenements M15/1827, M15/829, M15/830, M15/1287, L15/387 and E15/965 A depicted in Schedule 1
Date of Report	10 December 2020
Status of Report	Final
Decision	Works approval granted

Carmen Standring

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Date: 2020.12.10 13:31:40 +08'00'

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

This Decision Report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and of the Premises. As a result of this assessment, Works Approval W6432/2020/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Decision 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 and overview of Premises

On 20 August 2020 Evolution Mining (Mungari) Pty Ltd (the applicant) submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is to construct an 8.2km dewatering pipeline from the Mungari Gold Mine (Cutters Ridge Project) (the premises), to the Mungari Mill, where excess groundwater will be stored in an already established and operational water storage dam (White Foil Dam). The premises is approximately 20km west of Kalgoorlie and 20km east of Coolgardie, in the WA goldfields.

The premises relates to the category and assessed design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in Works Approval W6432/2020/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guidance Statement: Risk Assessments* (DER 2017) are outlined in Works Approval W6432/2020/1.

White Foil Dam is incorrectly listed in the current licence as a previously mined pit. It is in fact a lined dam, at the northern end of White Foil Pit.

Pope John Pit is located on the Kundana Gold Mine, a separate prescribed premises operated by Northern Star Resources (Northern Star) under prescribed premises licence L9190/2019/1 held by a subsidiary of Northern Star, Kundana Gold Pty Ltd. The pipeline from White Foil Dam to Pope John Pit is managed by the applicant under existing licence L7750/2001/9 for Mungari Gold Project, while the discharge point is the responsibility of Northern Star (authorised under L9190/2019/1). This division of responsibility is clarified in a legal agreement between the two parties.

Figure 1 shows the location of existing and proposed dewatering pipelines at the premises. There is currently no deposition into unlined facilities on site, except through reuse as dust suppression which is considered a consumptive use and therefore does not attract fees for discharge to the environment.

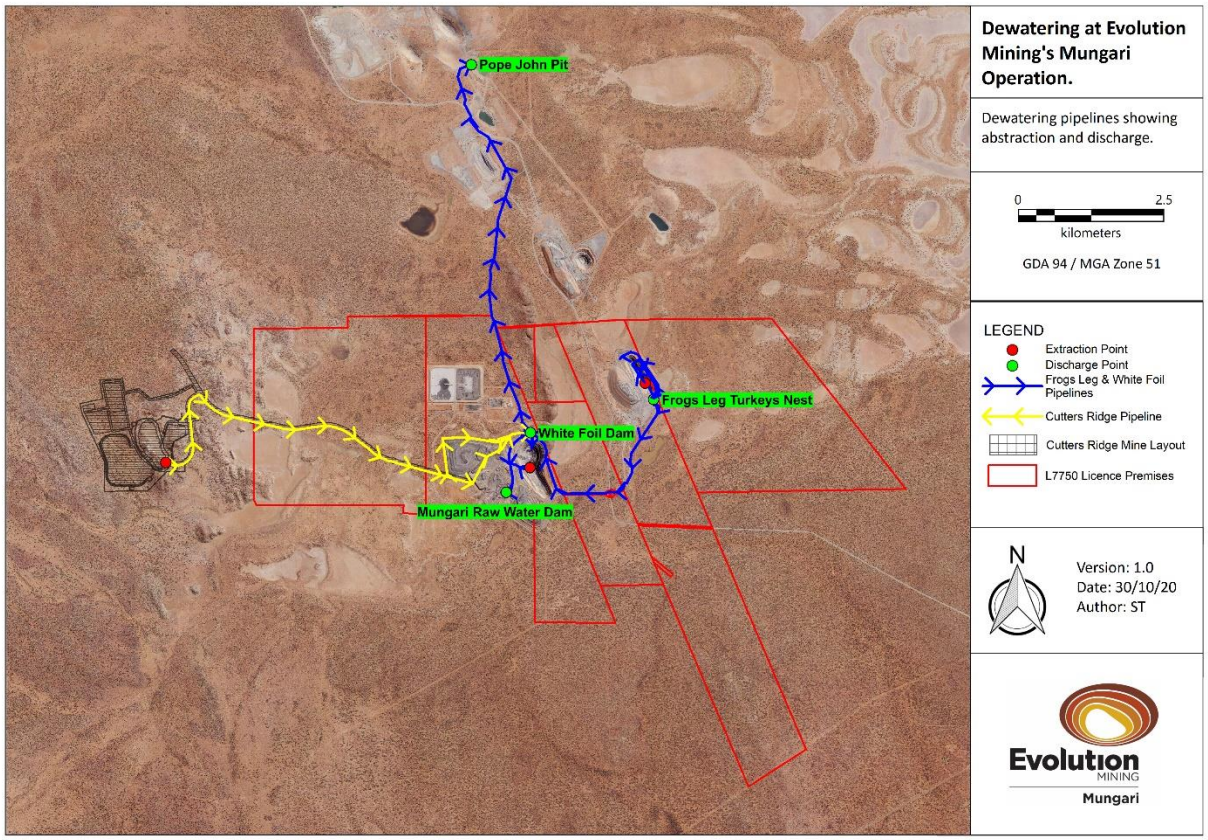

Figure 1: Dewatering pipelines at Mungari Gold Mine

The discharge point of the Cutters Ridge pipeline is a lined process water dam (White Foil Dam), therefore not considered a discharge to the environment. However the existing Mungari licence L7750/2001/9 authorises transfer of 2,500,000 kL per year from White Foil Dam to Pope John Pit, and L9190/2019/1 authorises subsequent discharge of surplus water to White Flag Lake. This does constitute a discharge to the environment.

Because the proposed Works (construction of Cutters Ridge Dewatering Pipeline) could change the volume or chemistry of water discharged to Pope John Pit and subsequently White Flag Lake (authorised under L9190/2019/1), a Works Approval is required under Part V Division 3 of the EP Act. The applicant has applied for this Works Approval, as they are the occupier of the premises on which the pipeline will be constructed and will be responsible for the pipeline. The Applicant (Evolution Mining (Mungari) Pty Ltd) will therefore be the Works Approval Holder for W6432/2020/1.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER 2017).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

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

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Earthworks	Air/windborne	NA
Noise	Earthworks and construction activities	Air/windborne	No residential receptor present, and no significant impact expected on fauna. Not considered further as a potential emission.
Sediment runoff from unconsolidated surfaces	Earthworks	Stormwater	NA
Operation			
Hypersaline water	Cutters ridge	Spill from pipeline	• Pipelines to be placed in a v-drain, with daily inspections. • Pipeline runs parallel to the main haul road from Mungari Mill to Cutters Ridge, which is traversed often so leaks likely to be noticed. • If flows of 5L/s (or 432kL per day) are encountered in a 24 hour period, inspections will be increased to twice daily (every 12 hours) • If flows of 10L/s (864kL per day) are maintained for one week consistently, inspections will still be carried out twice daily and scour pits will be installed at appropriate low points alongside the road.
		Seepage/overtopping of White Foil Dam	• White Foil Dam is lined. • Pumping to Pope John Pit is automatically triggered (using float valves) before White Foil Dam reaches capacity. • Emergency overflow from White Foil Dam is to White Foil Pit as per Figure 2. This is within a highly disturbed area and pooling would be well outside the root zone of vegetation.

Emission	Sources	Potential pathways	Proposed controls
		Discharge to Pope John Pit and subsequently White Flag lake	• Regulated under L9190/2019/1. • No additional transfer volume to Pope John Pit is requested.
		Gneral saline water controls associated with any pathway above	• A saline water management plan exists on site. • If a spill occurs, contaminated material removed and buried to reduce impact on vegetation. If required, the affected area may be ripped and reseeded.
Hydrocarbons	Pipeline pump	Soil and surface water	• Minor hydrocarbons shall be stored in bunded areas with a capacity of holding 110% tank capacity, self-bunded or double wall bunded tanks. • Inductions, training and awareness is conducted on site and monitoring/housekeeping is carried out regularly. A Spill Management Procedure exists on site along with a fully trained Emergency Response Team.

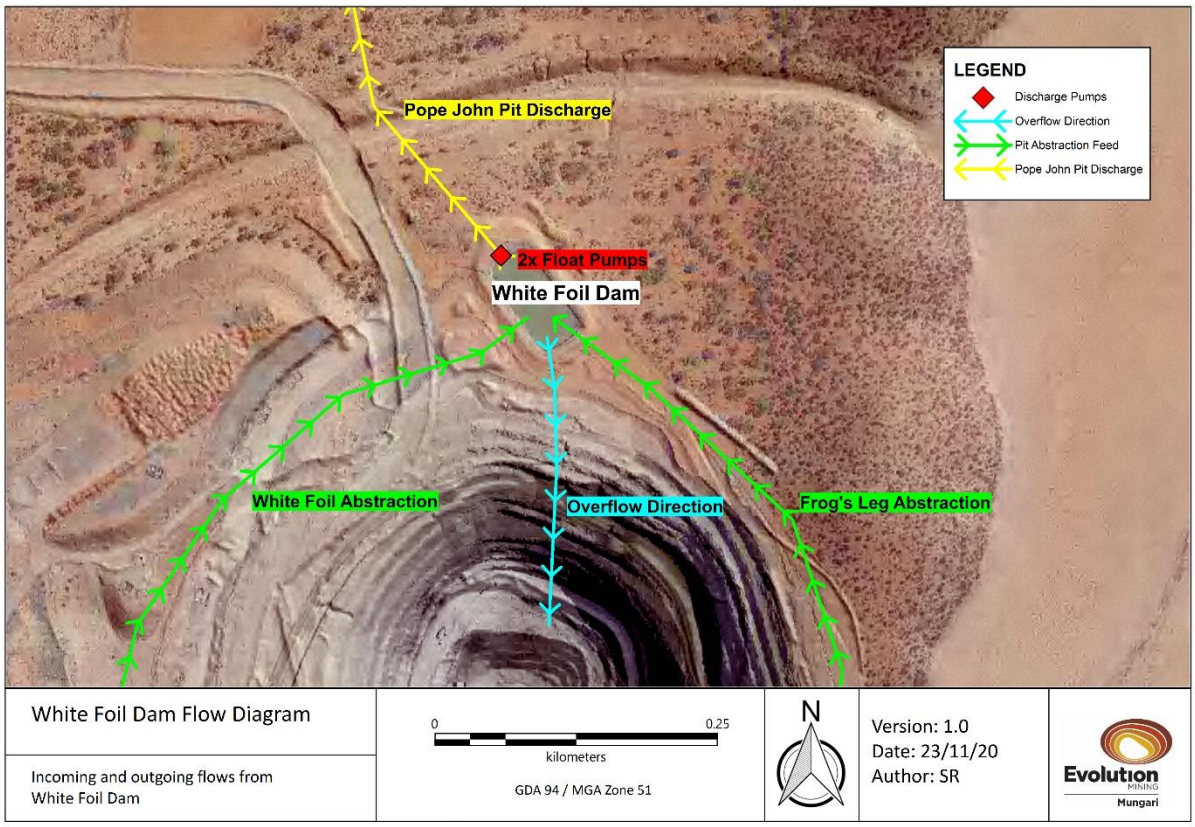

Figure 2: Saline water flows to and from White Foil Dam

3.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded employees, visitors and contractors of the applicant from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

There are no human receptors, and Table 2 below provides a summary of potential environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guidance Statement: Environmental Siting* (DER 2016)).

Table 2: Sensitive environmental receptors and distance from prescribed activity

Environmental receptors	Distance from prescribed activity
Heritage site - Registered Site 34415	Located at the northern end of the Cutters Ridge Pit
White Flag Lake	Excess water may end up in discharge to White Flag Lake under L9190/2019/1.
Groundwater	Regional groundwater is hypersaline. There are no known groundwater dependant ecosystems and the only beneficial use is mining and mineral processing. This use is not likely to be compromised by seepage of mine dewater, and therefore groundwater is not considered further as a receptor.
Soil and native vegetation	Surrounding the Works. However no additional clearing is required for these works, and it is in a highly disturbed operational area.

3.2 Risk ratings

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

Where the applicant 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 applicant'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 applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Works Approval W6432/2020/1 that accompanies this Decision Report authorises construction and time-limited operations. The conditions in the issued Works Approval, as outlined in Table 3 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. A risk assessment for the operational phase has been included in this Decision Report, however licence conditions will not be finalised until the department assesses the licence application.

Table 3: Risk assessment of potential emissions and discharges from the Premises during construction and operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions[2] of works approval	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Construction of dewatering infrastructure (pipelines, bunds, pumps)	Dust	No residences or other sensitive receptors in proximity. Dust dispersed through air and depositing on plants could reduce plant health	Surrounding vegetation	NA	C = slight L = Unlikely **Low Risk**	Y	NA	N/A
	Sediment run off from unconsolidated surfaces	Excessive sedimentation could smother vegetation	Surrounding vegetation	NA	C = Slight L = Possible **Low Risk**	Y	NA	Risk adequately regulated under general provisions of the EP Act
Operation **(including time-limited-operations operations)**								
Dewatering pipeline	Rupture of pipeline causing hypersaline discharge to land	Direct discharge onto soil and native vegetation, causing topsoil contamination and plant stress or death.	Soil and native vegetation	Refer to Section 3.1.1	C = Moderate L = Possible **Medium Risk**	Y	L7750/2001/9 existing conditions: • 1.2.1 – pipelines equipped with automatic cut-outs or provided with sufficient secondary containment • 1.2.6 - daily pipeline inspections W6432/2020/1 • Condition 1 (construction) • Condition 6 (time limited operations - operational • requirements)	If a pipeline breach leads to a spill of hypersaline water to soil or native vegetation, localised environmental damage would occur. If not suitably cleaned up, the zone of impact could increase over time.

Risk Event					Risk rating[1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions[2] of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
							• Condition 8 (clean-up)	
Discharge into White Foil Dam	Seepage from White Foil Dam	Hypersaline water into the root zone of vegetation	Vegetation	Refer to Section 3.1.1	C = Minor L = Rare **Low Risk**	Y	NA	White Foil Dam is lined. It is also located immediately north of White Foil Pit, which is being actively dewatered so even in the event of seepage, mounding is unlikely. No additional controls are required on the condition of the liner.
	Overtopping of White Foil dam - hypersaline water spill	Direct discharge onto soil and native vegetation, causing topsoil contamination and plant stress or death.	Soil, vegetation	Refer to Section 3.1.1	C = Minor L = Possible **Medium Risk**		L7750/2001/9 existing conditions: • 3.2.1 - monthly Standing Water Level measurement • 3.3.1 – monitoring monthly volumes from Frogs Leg to White Foil Dam, and from White Foil Dam to Pope John Pit Conditions for W6432/2020/1: • Condition 9 - monitor daily volumes from Cutter Ridge to White Foil Dam	Daily flow volumes allow assessment of sufficiency of inspection frequency and bund capacity.
	Change in chemistry of water discharged	Adding mine dewater from Cutters Ridge could change the water chemistry of	White Flag Lake	Refer to Section 3.1.1	Refer to section 3.3.1		L7750/2001/9 existing conditions: • 3.2.1 - monthly pH and TDS measurement;	Refer to section 3.3.1

Risk Event					Risk rating[1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions[2] of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
	Pope John Pit and White Flag Lake	White Foil Dam, which may impact receptors of this discharge authorised under L9190/2019/1.					quarterly suite of analytes predominantly metals Conditions for W6432/2020/1: • Condition 9 – 6 monthly spot sample of pH and TDS once during limited time operations. Similar requirements will be considered for L7750/2019/1 when amended for ongoing operations.	
Operation of pipeline pump	Spill of hydrocarbon	Direct contamination	Soil and surface water	Refer to Section 3.1.1	C = Minor L = Unlikely **Medium Risk**	Y	NA	Applicant controls reasonable. No additional conditions required.

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

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

3.3 Detailed risk assessment for changes to chemistry of discharges authorised under L9190/2019/1 (Kundana Gold)

3.3.1 Change in chemistry of discharges to Pope John Pit and White Flag Lake

Discharges of water from White Foil Dam authorised under L9190/2019/1 are to Pope John Pit and subsequently White Flag Lake.

This works approval does not change the volume of water authorised to be transferred from White Foil Dam to Pope John Pit. Condition 2.3.2 of Kundana licence L9190/2019/1 requires the standing water level in Pope John pit to be more than 6m below the pit crest, which is expected to be outside the root zone of vegetation. Changes in chemistry are therefore unlikely to impact vegetation. Groundwater is not considered a receptor (see section 3.1.2).

The Decision Report for L9190/2019/1 issued 30 January 2019 includes a comprehensive risk assessment of mine dewater discharge to White Flag Lake. The key risks are associated with erosion at the discharge point, and increased salt deposition to the lake surface. Existing conditions on L9190/2019/1 adequately control these risks. This Works Approval does not change the total volume of water authorised to be discharged either to Pope John Pit or White Flag Lake, so there will be no change to the erosion risk.

The total dissolved solids (TDS) used in the lake discharge assessment is >100,000mg/L. Groundwater sampled at Cutters Ridge is in the range or 46,900 to 89,000mg/L. While there is expected to be some increase in salinity due to evaporation in White Foil Dam and Pope John Pit, it is unlikely that the addition of Cutters Ridge Dewater will significantly increase the salinity of discharge to White Flag Lake.

Geochemical characterisation of the Cutters Ridge Gold deposit showed no significant acid mine drainage risk, and the groundwater sampled at the project is slightly alkaline which would provide some buffering capacity. Required six monthly water sampling will include pH, to detect any significant acidity that may require management. TDS will also be required to detect variations from that predicted.

Licence L7750/2001/9 for Mungari Gold Project requires quarterly monitoring of a suite of analytes, predominantly metals, in White Foil Dam. The small volume of additional water from Cutters Ridge is not expected to make a significant difference to this chemistry, but any change will be shown in this existing monitoring so no additional monitoring for these parameters is proposed for the Cutters Ridge Pipeline.

The Delegated Officer considers that the construction and operation of the Cutters Ridge pipeline makes no change to the risks assessed or required controls under L9190/2019/1.

4. Consultation

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

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website	None received	N/A
Local Government Authority advised of proposal (11/9/2020)	None received	N/A

Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal (11/9/2020)	None received	N/A
Northern Star Resources advised of proposal (2/11/2020)	None received	N/A
Applicant was provided with draft documents on 25 November 2020	Requested change in Table 1 from "110mm" to "110mm OR 250mm HDPE"	Change accepted. No change to environmental risk. Does not authorise any increase in flow rate, and condition 6 already provides provision for further actions required if flow rates exceed 10L/s.

5. Conclusion

Based on the assessment in this Decision Report, the Delegated Officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
2. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
3. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
4. Department of Water and Environmental Regulation (DWER) 30 January 2019, *Environmental Protection Act 1986, Part V Licence L9190/2019/1 (Mungari Gold Mine)* – available at https://www.der.wa.gov.au/our-work/licences-and-works-approvals/current-licences
5. Department of Water and Environmental Regulation (DWER) 30 January 2019, *Decision Report for L9190/2019/1 (Kundana Gold Pty Ltd)* - available at https://www.der.wa.gov.au/our-work/licences-and-works-approvals/current-licences
6. Department of Water and Environmental Regulation (DWER) 18 December 2019, *Environmental Protection Act 1986, Part V Licence* L7750/2001/9 *(Kundana Gold Pty Ltd)* – available at https://www.der.wa.gov.au/our-work/licences-and-works-approvals/current-licences
7. Evolution Mining (Mungari), *Cutters Ridge Dewatering Works Approval Application*, August 2020 (DWER Document A1926273 and A1926271)
8. Evolution Mining (Mungari), email – *Final clarifications -Cutters Ridge Works Approval*, 24 November 2020 (DWER Document A1957735)

Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY		
Application type		
Works approval	☒	
Date application received		20/8/2020
Applicant and Premises details		
Applicant name/s (full legal name/s)		Evolution Mining (Mungari) Pty Ltd
Premises name		Mungari Gold Mine - Cutters Ridge Open Pit Project
Premises location		M15/1827 (expires 10/01/2038), M15/829 (expires 14/03/2041), M15/830 (expires 14/03/2041), M15/1287 (expires 23/06/2025), L15/387 (expires 09/12/2039) and E15/965 (expires 09/02/2022).
Local Government Authority		Shire of Coolgardie
Application documents		
HPCM file reference number:		DER2020/000362
Key application documents (additional to application form):		Detailed flora and fauna surveys, hydrological investigations, groundwater analysis.
Scope of application/assessment		
Summary of proposed activities or changes to existing operations.		Construction of a 8.2km pipeline from the Cutters Ridge open pit project, to the Mungari Mill, where excess groundwater will be stored in an already established and operational water storage dam.

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

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity
Category 6: Mine dewatering: premises on which water is extracted and discharged into the environment to allow mining of ore	Not more than 100,000 tonnes per year

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	Yes ☐ No ☒	Ministerial statement No: EPA Report No:

relevant to the application?		
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 details provided – A1947053
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	If N/A explain why? Mining tenements
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☐ No ☒	No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	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 ☐	Licence/permit No: GWL178353(4)
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☒ No ☒	
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	NA
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 - awaiting approval for the Cutters Ridge Mining Proposal Amendment, submitted 23/7/2020.
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 *Contaminated Sites Act 2003*?	Yes ☐ No ☐ Not relevant to this application	Classification: Date of classification: N/A