Application for Works Approval

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

Works Approval Number	W6370/2020/1
Applicant	Hawthorn Resources Limited
ACN	009 157 439
File Number	DER2020/000057
Premises	Anglo Saxon (Trouser Legs) Gold Mine Kurnalpi-Pinjin Road, Pinjin KOOKYNIE WA 6431 Mining Tenements M31/79 and M31/78
Date of Report	23 July 2020
Decision	Works approval granted

Gargi Joshi
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Gargi Joshi
Senior Environmental Officer, Resource Industries
INDUSTRY REGULATION

An officer delegated by the CEO under section 20 of the EP Act

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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 operation of the Premises. As a result of this assessment, Works Approval W6370/2020/1 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://www.der.wa.gov.au.

2.2 Application summary and overview of Premises

On 31 January 2020, 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 undertake construction works relating to mine dewatering at the Premises. The Premises is approximately 145 km northeast of Kalgoorlie.

In order to dewater the Anglo Saxon underground mine, the applicant proposes to construct and operate a dewatering pipeline to remove the excess water. The pipeline will run from the Anglo Saxon underground mine to the Coles abandoned mining pit. The Coles abandoned mining pit is located approximately 7 km north of the mine and is considered a satellite mine. The pipeline will follow a pre-existing haul road to the Coles abandoned pit where the water will be discharged. No additional clearing or disturbance of vegetation is required. The operating period for mine dewatering activities will be approximately 26 months.

The Premises relates to the category and assessed production/design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in Works Approval W6370/2020/1. 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 W6370/2020/1.

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	Pipeline installation, vehicle movements, lift-off from existing cleared areas and earthworks	Air/windborne pathway	None specified. Construction impacts are expected to be minimal due to the placement of the pipeline in an existing haul road with minimal disturbance/earthworks required and the short-duration of the works.
Noise	Pipeline installation, vehicle movements	Air/windborne pathway	
Operation			
Saline to hypersaline water	Burst or leak of dewatering pipeline	Direct discharge to land	Pipeline constructed and installed to Australian Standards and Plastic Industry Pipe Association of Australia Limited Guidelines. Pipeline will run within existing roadway with bunding and infiltration sumps; or in culverts where the pipeline crosses floodways. Pipeline will be fitted with a telemetry system and auto shut-off to detect and control leaks. Documented visual inspections of the pipeline will be carried out when the pipeline is in use.
Saline to hypersaline water	Overtopping or seepage from the Turkey nest dam	Direct discharge to land	Dam lined with high-density polyethylene (HDPE) liner (dam dimensions 30 m x 30 m x 4 m). Dam maintained with a freeboard of 0.3 m (capacity 0.3 ML). Dam fenced to minimise fauna access which may damage the liner.
Saline to hypersaline water	Overtopping from Coles abandoned pit	Direct discharge to land	Sufficient capacity in the pit. Water balance assessments concluded that, at the maximum discharge rate of 8 L/s (250 ML per year), the water level in the pit would stabilise at approximately 19 m below ground level confirming sufficient capacity (Rockwater 2020).
Saline to hypersaline water	Seepage from Coles abandoned pit	Groundwater flow and mounding	Monitoring bore between Coles abandoned pit and receptor.

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'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 2 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 *(Guidance Statement: Environmental Siting* [DER 2016]).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	**Distance from prescribed activity**
Pinjin Station Homestead	130 m from northern edge of the Anglo Saxon underground mine and 10 km from the Coles abandoned pit.
Environmental receptors	**Distance from prescribed activity**
Flora and fauna	The Premises are surrounded by typical goldfields flora and fauna, including introduced cattle.
Groundwater	Groundwater levels measured in bores in the vicinity of the Premises indicate that groundwater slopes downwards to the south towards Lake Rebecca, and at Coles abandoned pit will be at 356 m AHD, i.e. approximately 6 m below the pit base at 362 m AHD (Rockwater 2020). Most of the groundwater in stock bores in the Pinjin area is brackish, with salinities of about 6,000 mg/L TDS. The water to be pumped from Anglo Saxon underground mine will initially have salinity of about 8,500 mg/L TDS, increasing as mining proceeds deeper (Rockwater 2019). Groundwater modelling concluded that pumping water at worst-case rates (685 m^3/day) for five years would result in surrounding groundwater stabilising at approximately 377 m AHD (23 mbgl). Under worst-case infiltration and hydraulic conductivity assumptions, the groundwater level was predicted to stabilise at between 9.5 mbgl and 16 mbgl (Rockwater 2020).
Pretend Bore	A non-operating bore located 1.2 km north-northwest of Coles abandoned pit. Pretend Bore is cased to 42 m below ground surface as measured inside the casing in January 2018. The static water level in the bore was 27.7 m below ground. The bore water is reported to have a salinity of 4,000 mg/L TDS; therefore, the mixing of bore water with water derived from discharge into Coles abandoned mine pit may result in salinity increase to above stock water quality (Rockwater 2019). Groundwater modelling of the expected discharge rate into Coles abandoned pit (250 ML/year) for five years predicted that Pretend Bore is unlikely to receive water that has infiltrated from Coles abandoned pit, assuming that the bore is not pumped (Rockwater 2019).
Station Dam	Water dam located 2 km northeast of Coles abandoned pit. Groundwater modelling of the expected discharge rate into Coles abandoned pit (250 ML/year) for five years predicts that groundwater levels could rise by 2.5 m below Station Dam. This level would be 18 m below the base of the dam

	(Rockwater 2019).

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 W6370/2020/1 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 operation of the Premises i.e. mine dewatering activities. 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, commissioning 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								
Pipeline installation, vehicle movements, lift-off from existing cleared areas and earthworks	Dust	Air/windborne pathway causing impacts to health and amenity	Pinjin Station Homestead	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	N	N/A	N/A.
Pipeline installation, vehicle movements	Noise	Air/windborne pathway causing impacts to amenity		Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	N/A	N/A Environmental Protection (Noise) Regulations 1997 apply	N/A.
Operation (including time-limited-operations operations)								
Storage of water in Turkey nest dam	Saline-hypersaline water	Overtopping of dam causing direct discharge to land/inundation causing contamination and loss of vegetation	Native vegetation	Refer to Section 3.1	C = Minor L = Unlikely **Medium Risk**	Y	Condition 6 **Condition 7**	Continuous monitoring of flow into the dam and daily monitoring of freeboard required to ensure containment capacity is maintained.
	Saline-hypersaline water	Seepage through dam liner to groundwater	Groundwater Station Dam Pretend Bore	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	**Condition 6**	Specification of HDPE liner thickness required to ensure seepage is minimised (no specification provided by applicant).

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**				
Pipeline transfer of water from Anglo Saxon underground mine to Coles abandoned pit	Saline-hypersaline water	Pipeline burst or leak causing direct discharge to land/inundation causing contamination and loss of vegetation	Native vegetation	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	**Condition 1** **Condition 6**	Specification of relevant Australian Standards required to ensure pipeline is constructed to minimise risk of pipe burst or leak (no specification provided by applicant). Daily frequency of pipeline inspections required to ensure spills are not left in sumps and that small leaks that do not trigger automatic cut off are detected (no frequency of inspection provided by application).
Discharge of water into Coles abandoned pit	Saline-hypersaline water	Overtopping of dam causing direct discharge to land/inundation causing contamination and loss of vegetation	Native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	**Condition 6** **Condition 7**	Maximum water level in the pit required to ensure sufficient capacity is maintained and groundwater mounding is controlled. Limit set at maximum stable pit water level as determined by modelling (Rockwater 2020). Monthly monitoring of the water level in the pit required to verify that the limit is maintained. Continuous monitoring of flow into the dam required to ensure containment capacity is maintained.
Discharge of water into Coles abandoned pit	Saline-hypersaline water	Seepage through pit base and walls causing groundwater mounding causing impacts to vegetation root zone/loss of vegetation	Native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	**Condition 6** **Condition 7**	Maximum water level in the pit required to ensure sufficient capacity is maintained and groundwater mounding is controlled. Monthly monitoring of the water level in the pit required to verify that the limit is maintained.

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**				
Discharge of water into Coles abandoned pit	Saline-hypersaline water	Seepage through pit base and walls causing alteration to groundwater quality, level and flow causing impacts to water sources used for watering of stock	Pretend Bore Station Dam	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk** Note: Pretend Bore assessed as the most sensitive receptor	Y	**Condition 1** **Condition 7** **Condition 10**	Monitoring bore installation specification required to ensure that the bore is constructed appropriately (no specification provided by the applicant). Timing of monitoring bore installation required so that the well is serviceable and baseline data can be obtained prior to commencement of mine dewatering. Groundwater monitoring program required to monitor groundwater level and quality between the source and receptor (no groundwater monitoring program specified by the applicant). Monitoring parameters based on bore water quality data provided by the applicant. Monitoring frequency set to establish baseline and quarterly data. Monitoring of pit water quality required to allow groundwater quality to be characterised and compared to monitoring bore data. Parameters and frequency set to match groundwater monitoring program.

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.

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 (23/03/2020)	None received	N/A
Shire of Menzies advised of proposal (25 March 2020)	No comments received.	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal (25 March 2020)	DMIRS replied on 26/03/2020 stating no objections to the grant of this works approval.	Noted.
Applicant was provided with draft documents on 24 June 2020	Applicant responded on 20 July 2020 and mentioned that they would prefer to have a single flow meter rather than two (one for discharge to Turkey's nest and one for discharge to Coles pit). The applicant also mentioned that they have no objection should the request not be accepted as it is not major practical significance.	On 23 July 2020 the Applicant was advised that inflow measurement into Turkey's nest and the freeboard measurement are operational controls specified to address the risk of overtopping in abnormal operating scenarios and that the draft will be finalised with no further changes noting that the Applicant had no objection. The Applicant responded on 23 July 2020 and confirmed agreement to finalise draft as is.

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) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
3. Department of Environment Regulation (DER) 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
4. Rockwater 2019, Proposed Water-Storage in Coles Pit: Potential for Impacting a Dam and Bore, *Report prepared for Hawthorn Resources Limited*, September 2019, Western

Australia.

5. Rockwater 2020, *Water Balance of Coles Pit with Water Disposal*, *Report prepared for Hawthorn Resources Limited*, May 2020, Western Australia.

Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)					
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	☐	Current works approval number:			
Amendment to licence	☐	Current licence number:			
		Relevant works approval number:		N/A	☐
Registration	☐	Current works approval number:		None	☐
Date application received		31 January 2020			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Hawthorn Resources Limited			
Premises name		Anglo Saxon (Trouser Legs) Gold Mine			
Premises location		M31/78 and M31/79; Kurnalpi-Pinjin Road, Pinjin			
Local Government Authority		Shire of Menzies			
Application documents					
HPCM file reference number:		DER2020/000057			
Key application documents (additional to application form):		Original application: Attachment 1A – Tenement holder Authority Attachment 4A – Level 1 Flora and Vegetation Survey Attachment 4B – Fauna Assessment Attachment 8A – Hydrological Modelling of potential impacts Attachment 8B – Groundwater chemical analysis Further Information: Attachment 1 Water Balance for Coles Pit Attachment 3 Turkeys nest location Attachment 4 Monitoring Bore location Attachment 5 Dewatering Proposal to Coles (premise map) HAR023 Request for additional Information Response Rev 1			

Scope of application/assessment	
Summary of proposed activities or changes to existing operations.	Construction of a 7 km pipeline to discharge excess dewater to Coles abandoned pit from the Anglo Saxon underground mine.

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	Proposed changes to the production or design capacity (amendments only)
Category 6: Mine Dewatering premises on which water is extracted and discharged into the environment to allow mining of ore.	Up to 250,000 tonnes per year.	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 ☐	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☒ Expiry: Other evidence ☒ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date: If N/A explain why? Mining Proposal and GWL applications submitted under assessment
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: Amendment being Sought Licence/permit No: GWL201871(1).

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 Groundwater Area 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: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☒
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 ☐	*Environmental Protection (Rural Noise) Regulations 1997*
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	N/A
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	N/A
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	Date of classification: N/A

Direct interest stakeholders

Shire of Menzies	Letter to be sent Yes ☒ No ☐
DMIRS	Letter to be sent Yes ☒ No ☐