Application for Works Approval

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

Works Approval Number	W6750/2022/1
Applicant	Evolution Mining Limited
ACN	084 669 036
File number	DER2022/000472
Premises	Kundana Gold Mine Legal description Mining tenements M16/72, M16/73, M16/87. M16/97, M16/157, M16/308, M16/309, M15/669, M15/993, M16/428, M24/924, L16/39, L16/105 and L16/106 Kalgoorlie WA 6430 As defined by the premises maps attached to the issued works approval
Date of report	7 March 2023
Decision	Works approval granted

A/SENIOR ENVIRONMENTAL OFFICER, INDUSTRY REGULATION
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 operation of the premises. As a result of this assessment, works approval W6750/2022/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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 13 September 2022, 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 Category 6: mine dewatering at the premises – the Kundana Gold Mine[1]. The premises is approximately 20 km west of City of Kalgoorlie-Boulder.

This works approval application is to develop the Hornet Open Pit that is located below the groundwater table and requires dewatering by sump pumping to remove groundwater inflows and runoff from incident rainfall over the pit. The Hornet Pit will be mined in two stages. The stage 1 pit will extend to a depth of about 40m below surface and will be mined over 5 months. The stage 2 pit design extends to a depth of about 100m below ground at its deepest point and will be mined over a 9 month period.

This works approval application proposes construction and time limited operations for dewatering infrastructure from the Hornet Open Pit to the adjacent RHP Underground Project, where pipelines will connect with the existing dewatering pipeline infrastructure via Hornet dam. Proposed dewatering infrastructure pipelines are shown in Figure 1 below. Figure 2 shows the abstraction and discharge points.

The applicant has not applied to increase dewatering throughput. The groundwater inflows from the Hornet Open Pit are predicted to be no more than 1,642,500 tonnes per year, that equates to 14% of the current assessed production / design capacity of 12,000,000 tonnes per annual period on the Licence.

Mine dewater is currently used for gold processing and dust suppression. Excess water is sent to the Pope John Pit and then discharged to White Flag Lake via a pipeline. In 2021, 3,507,499

[1] Evolution Mining Limited holds a current licence L9190/2019/2 for Kundana Gold Mine that includes the following categories:

- Category 5: processing or beneficiation of metallic or non-metallic ore
- Category 6: mine dewatering
- Category 12: screening etc. of material
- Category 52: electric power generation
- Category 89: putrescible landfill

kL of water was discharged to White Flag Lake under licence L9190/2019/2.

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 W6750/2022/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6750/2022/1.

Once the works have been completed in this works approval, the licence holder will require the licence to be amended to incorporate the proposed dewatering pipelines at Hornet.

2.2.1 Other approvals

Water will be abstracted under Groundwater Licence GWL 109479 (8) that has an annual entitlement of 10,388,000 kL.

A clearing permit was granted on 22 June 2022 by the Department of Mines, Industry Regulation and Safety (DMIRS), Clearing Permit (CPS9782/1).

Aboriginal Heritage:

There are a number of lodged heritage sites across the premises as shown in Figure 5. The Department of Planning Lands and Heritage (DPLH) advised DWER on 8 February 2023 that the project's development footprint as depicted in the provided maps against the Register of Places and Objects, as well as the DPLH Aboriginal Heritage Database, that they can confirm that the proposed infrastructure does not intersect with any known Aboriginal heritage places or sites. As it currently stands, approvals under the *Aboriginal Heritage Act 1972* (AHA) are not required.

The premises is covered by Native Title claims Marlinyu Ghoorlie (Tribunal file no. WC2017/007) and Manduwongga (Tribunal file no. WC2017/001). It is noted by DPLH that Evolution Mining currently has Aboriginal Agreements in place with the Maduwongga and the Marlinyu Ghoorlie people, and it is encouraged ongoing consultation occur with both parties as the project progresses.

It was also noted by DPLH that Aboriginal Heritiage Surveys were undertaken in 2020 across the Project area with both relevant Native Title Claimants, Marlinyu Ghoorlie and Maduwongga (O'Connor 2020a and 2020b). No new heritage sites were identified during the surveys. DPLH does not appear to have a copy of the referenced 2020 O'Connor Report on file, and it would be appreciated if the proponent provide DPLH with a copy for their records.

DWER notes that the applicant is responsible for ensuring appropriate approvals and stakeholder engagement has taken place under the *Aboriginal Heritage Act 1972* and subsequently the *Aboriginal Cultural Heritage Act 2021* (following completion of the transitional period from the 1972 Act[2]).

[2] Before the *Aboriginal Cultural Heritage Act 2021* is implemented there will be a transitional period during which the regulations, statutory guidelines and operational policies will be developed to ensure the ACH Act will have its intended effects. During the transitional period the *Aboriginal Heritage Act 1972* will remain in force.

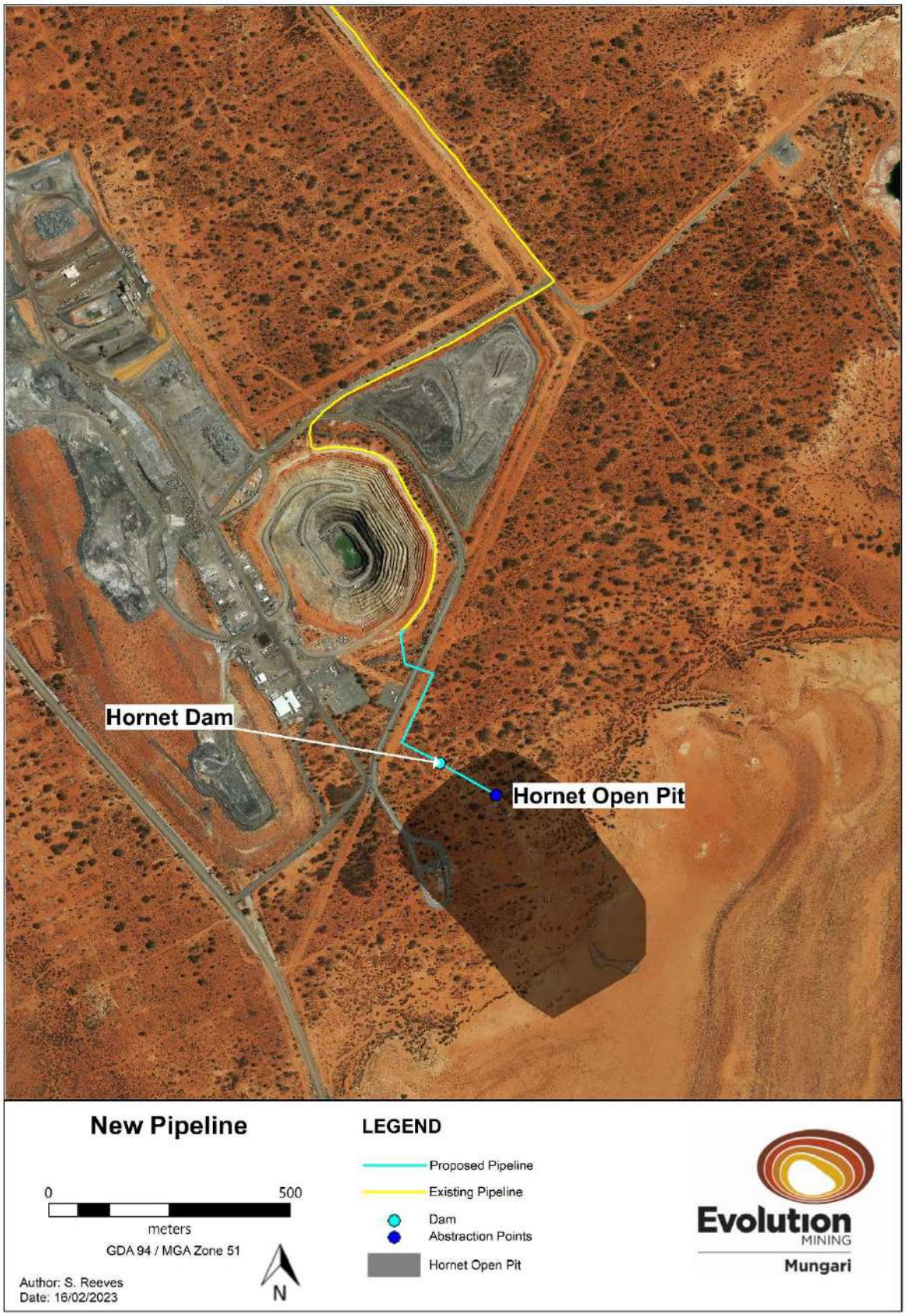

Figure 1: Hornet Open Pit proposed pipeline

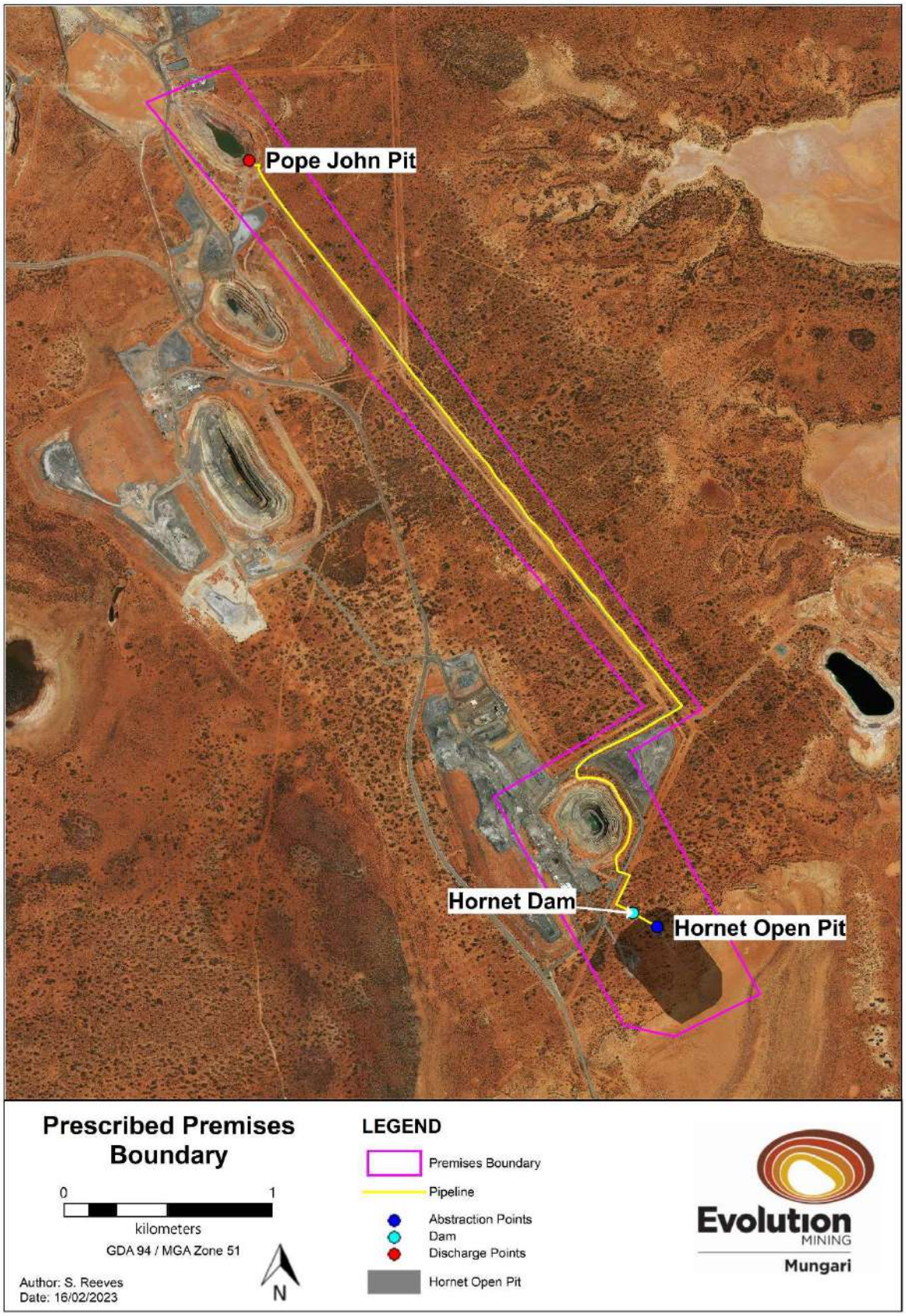

Figure 2: Premises boundary with abstraction and discharge point

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020).

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

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction / operation which have been considered in this decision report are detailed in Table 1 below. Table 1 also details the 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	Construction of dewatering infrastructure (pipelines, bunds, pumps, dam)	Air / windborne pathway	• Dust generating activities will be visually monitored to ensure that vegetation and workers are not impacted. • Dust generating equipment will be assessed and a range of measures implemented including water carts, restricting access, increased wind breaks and change to nozzle parameters when required. • Any action being implemented will be reviewed to ensure that it is effective and does not have any adverse impacts. • Dust suppression used on haul roads and as applicable access tracks. • Reducing dust generation by working to weather conditions and driving on established roads. • Dust suppression using water carts. • Daily observations of dust within work area and additional measures implemented if required. • Revegetation can help prevent dust emissions.
Sediment runoff from unconsolidated surfaces	Construction of dewatering infrastructure (pipelines, bunds,	Direct discharge / runoff	No specific controls provided.

Emission	Sources	Potential pathways	Proposed controls
	pumps, dam)		
Time limited operation			
Rupture of pipeline causing hypersaline water discharged to land	Dewatering pipeline	Direct discharge onto land	• Standard dewatering pipeline used by Evolution is 160MM PN12.5 x 100M SD13.6 HDPE piping that meets: o AS/NZS 2033:2008: Installation of polyethylene pipe systems; o AS/NZS 4129:2008 Fittings for polyethylene (PE)pipes for pressure applications; o AS/NZS 4130:2009 Polyethylene (PE) pipes for pressure applications; and o AS/NZS 4131:2010 Polyethylene (PE) compounds for pressure pipes and fittings. • Daily visual pipeline checks. • Record the weekly flow meter readings. • Bunding, v-drains and scour pits will assist to contain the spill and isolation valves will be turned on by the person inspecting the pipeline. • Repairs will be carried out on the pipeline and any bunding that may have been damaged will be reconstructed to standard by the service crew. • Earthmoving equipment will be used by the service crew to remove contaminated soil. Soil sampling will be carried out by the Environment Department to assess the extent of the contamination. • Reports will be provided in accordance with Section 72 of the EP Act should any environmental harm occur. • Rehabilitation of the affected area will be carried out by the Environmental Department if required.
Overtopping of Hornet dam	Dewatering discharge into Hornet Dam	Direct discharge	• Pit water volume monitored during periods of discharge. • Hornet Dam will be constructed over an area of 0.6ha. The embankments will be constructed using non-acid forming oxide material at a 2:1 batter. The capacity of the dam will be approximately 6,043kL. • A freeboard of 1.0m will be maintained and a float system installed to manage

Emission	Sources	Potential pathways	Proposed controls
			the water level to prevent overtopping. • If unexpectedly high volumes of water are encountered, excess water will be discharged to Pope John Pit via this float system to prevent overtopping of the dam.
Seepage Hornet dam	Dewatering discharge into Hornet Dam	Direct discharge	The dam will be lined with 1 mm HDPE.
Overtopping hypersaline mine dewater from Pope John Pit	Dewatering discharge into Pope John Pit	Direct discharge	• Pope John Pit has a total capacity of 1,538,219kL. The average monthly input from mine dewatering into Pope John Pit is 179,609kL (approximately 6% of the total capacity). • The region experiences seasonal rainfall and has a high evaporation rate. <u>Existing licence controls</u> • A freeboard of 6m is required under the current licence conditions (L9190/2019/1). The average freeboard for the year to date is 44.5m (Evolution Mining 2022 Request for additional information). • Monitoring and reporting of the crest level and flow meters to measure the volume is currently conditioned in the existing licence L9190/2019/2.
Seepage from Pope John Pit	Discharge into Pope John Pit	Infiltration to groundwater	None proposed.
Change in chemistry of water White Flag Lake	Discharge into White Flag Lake (via Pope John Pit)	Direct discharge	See Section 3.3.
Erosion and ponding on White Flag Lake causing damage to native vegetation	Discharge into White Flag Lake (via Pope John Pit)	Direct discharge	There are existing controls on the licence to manage erosion and ponding on the licence. <u>Existing licence controls:</u> • Dewatering discharge from Kundana mine operations and Mungari Gold Project discharge to White Flag Lake, via a suitable energy dissipation device to ensure minimal erosion and scouring impacts, reduce the likelihood of ponding in White Flag Lake and minimise damage to surrounding vegetation.
Hydrocarbon	Hydrocarbon	Direct	• The source will be stopped immediately,

Emission	Sources	Potential pathways	Proposed controls
spill	storage.	discharge	and the spill will be contained with additional bunding from the spill kit that will be in the vicinity. • Any contaminated soil will be removed and disposed of appropriately by the service crew into a nearby bioremediation pad. • Soil and water sampling will be carried out by the Environment Department to assess the contamination. Reports provided in accordance with Section 72 of the EP Act. • Rehabilitation of the affected area will be carried out by the Environmental Department is required.

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Figure 3, Figure 5 and 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 *(Guideline: Environmental Siting* (DWER 2020)).

The closest sensitive human receptors are located at the City of Kalgoorlie-Boulder, located approximately 20km east of the premises and therefore have not been included in the table below.

Table 2: Sensitive environmental receptors and distance from prescribed activity

Environmental receptors	Distance from prescribed activity
White Flag Lake, including associated fauna For further information regard fauna within White Flag Lake see section 3.3	Approximately 6kms north of the Hornet Open Pit
Kopai Lake	1km southwest of Hornet Open Pit
Hydrography – surface water bodies	Within the premises boundary
Threatened fauna Leipoa ocellata (malleefowl)	Within premises boundary
Threatened and Priority Flora *Notisia inonsa (priority 3)*	<1km of proposed activities
Aboriginal sites and Heritage (as shown in Figure 5)	

Kundana Site 1	Approximately 3km northwest of Hornet Open Pit.
Kundana Site 2	Approximately 2km north of Hornet Open Pit
Kundana Site 3: Artefacts, scatter, midden, scatter.	Approximately 3km north of Hornet Open Pit.
Kajjee Darbal (Spear Trees) ceremonial, mythlogial, hunting place.	Approximately 2.3km northwest of Hornet Open Pit.
Bullock Hole 01	Approximately 2km northeast of Hornet Open Pit.
Bullock Hole 03 – artefacts, scatter.	Approximately 2km northeast of Hornet Open Pit.
Kopai Lakes.	<1km south of Hornet Open Pit

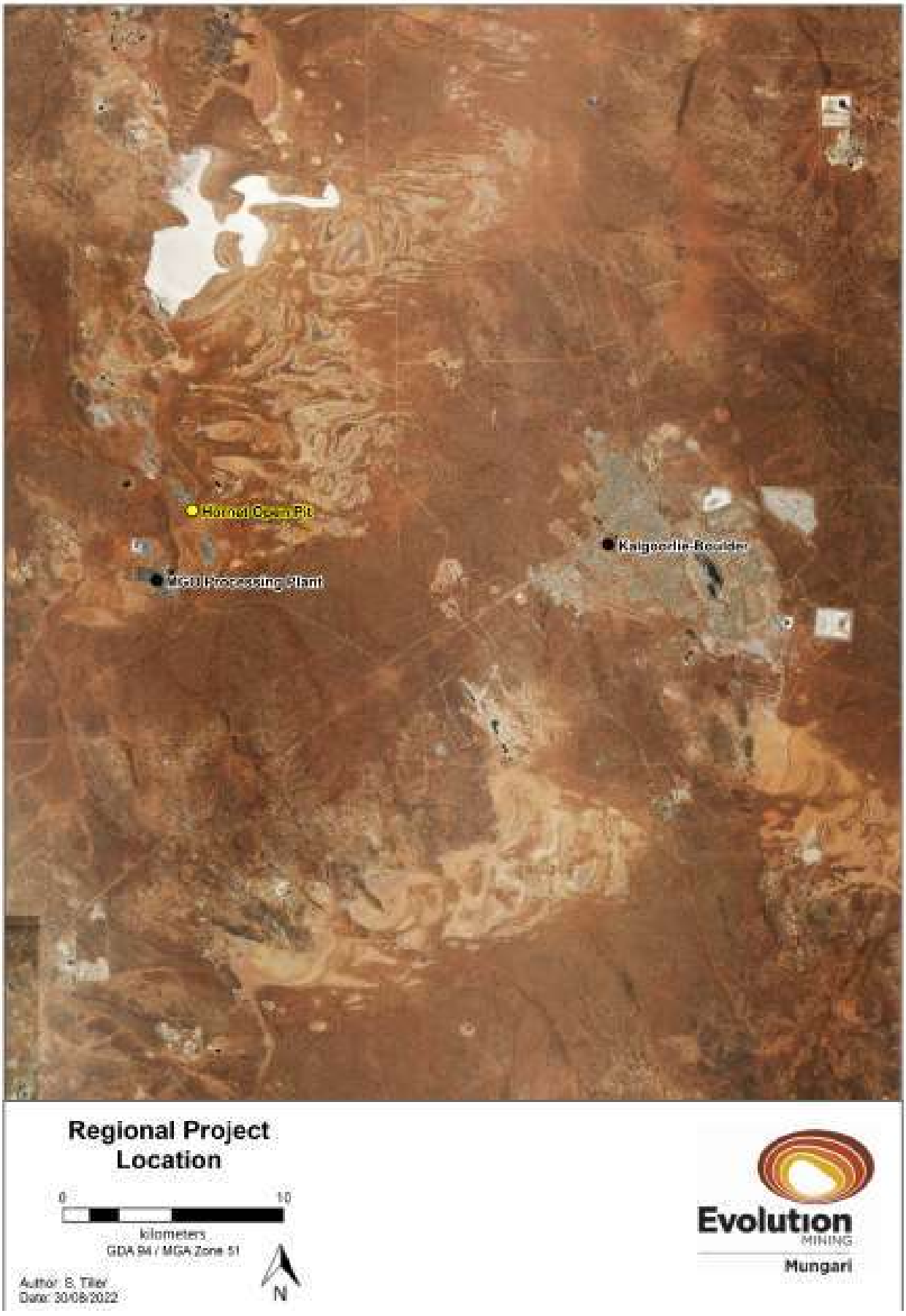

Figure 3: Regional Project location
Works approval: W6750/2022/1

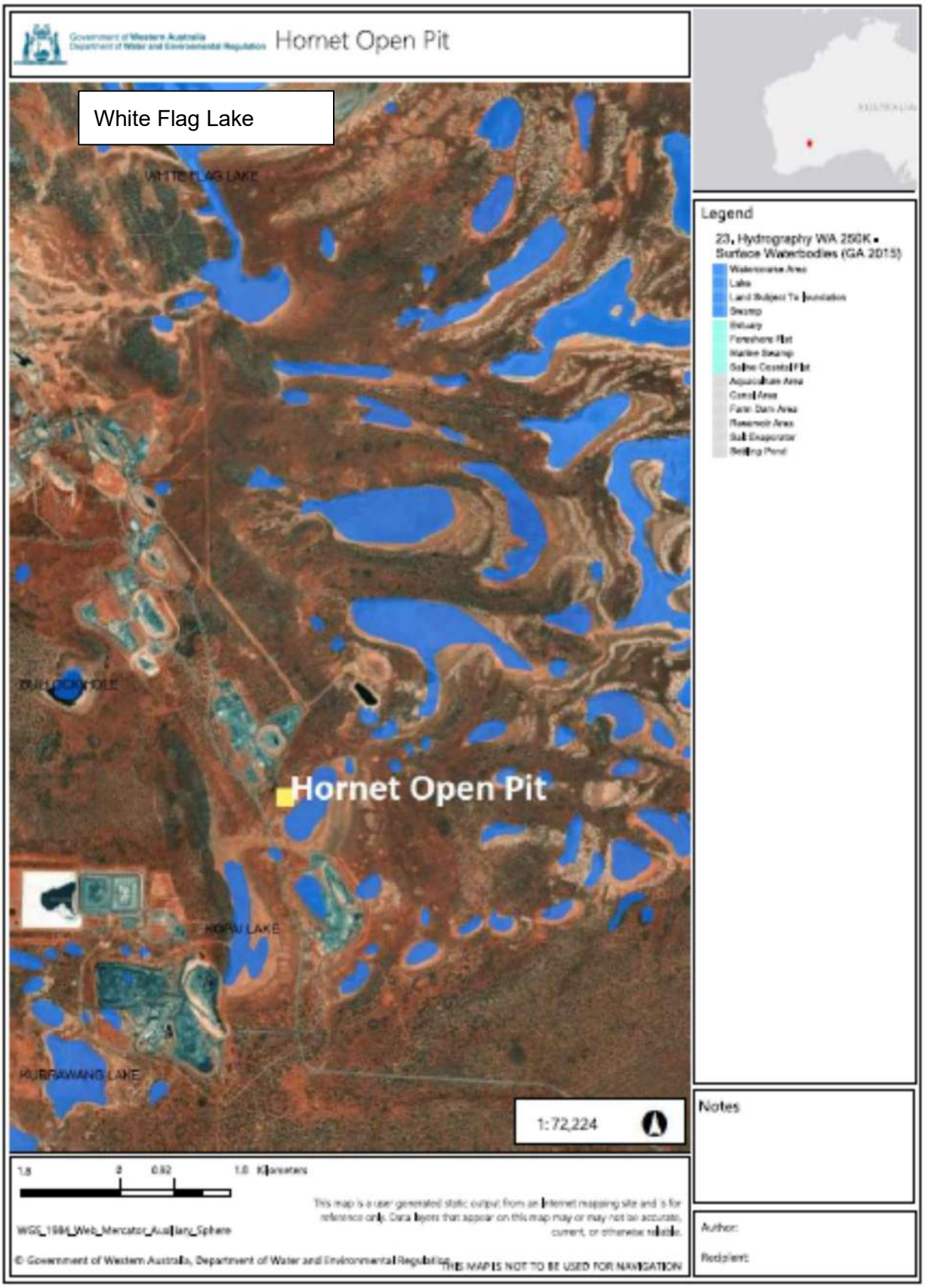

Figure 4: Hornet Open Pit, Kopai Lake and White Flag Lake

Figure 5: Aboriginal heritage sites

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) 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 W6750/2022/1 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 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 events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Construction of dewatering infrastructure (pipelines, bunds, pumps, dam)	Dust	Air/windborne pathway, deposition on plants could reduce plant health.	Surrounding vegetation	*Refer to Section 3.1*	*C = Minor* *L = rare* ***Low Risk***	Y	N/A	NA
Operation (including time-limited-operations operations)								
Dewatering pipeline	Rupture of pipeline causing hypersaline water discharged to land	Direct discharge onto soil and native vegetation, causing contamination and plant stress or death.	Soil and native vegetation.	*Refer to Section 3.1*	*C = Moderate* *L = Unlikely* ***Medium Risk***	N	Proposed applicant controls: Condition 1 (pipelines to be placed in v-drains with scour pits) Condition 1 (pipelines to be constructed of HDPE)	The applicant's controls have been conditioned. The Delegated Officer has conditioned pipeline to be fitted with leak detection instrumentation and flow metres to mitigate risk associated with pipeline leak/rupture.
Dewatering effluent discharge into Hornet Dam	Overtopping of dam	Direct discharge onto soil and native vegetation, causing contamination and plant stress or death.	Soil and native vegetation.	*Refer to Section 3.1*	*C = Moderate* *L = Unlikely* ***Medium Risk***	Y	Proposed applicant controls: Condition 1 (float system installed)	The applicant has committed to monitoring the dam and it will have a float system in place, so that if there is a high volume of water, water will be directly transferred to Pope

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
								John Pit Dam.
Discharge into Pope John Pit	Seepage from Pope John Pit	Groundwater mounding Hypersaline water into the root zone of vegetation	Soil and vegetation	*Refer to Section 3.1*	C = Moderate L = Unlikely **Medium Risk**	Y	Proposed applicant controls: Condition 7 (6 metre freeboard) Condition 8 (monitoring)	The applicant has committed to maintaining a freeboard of 6 m and conducting daily inspections. Monitoring and reporting has been conditioned as per existing licence L9190/2019/2
	Overtopping of Pope John Pit	Direct discharge onto soil and native vegetation causing contamination and plant stress or death.	White Flag Lake	*Refer to Section 3.1*	*C = Moderate* *L = Unlikely* ***Medium Risk***	Y	Proposed applicant controls: Condition 7 (6 metre freeboard) Condition 8 (monitoring)	The applicant has committed to maintaining a freeboard of 6 m and conducting daily inspections. Monitoring and reporting has been conditioned as per existing licence L9190/2019/2
Discharge into White Flag Lake (via Pope John Pit)	Change in chemistry of water discharged into Pope John Pit and White Flag Lake	Adding mine water from Hornet Pit to Pope John Pit and White Flag Lake may impact receptors of this discharge authorised under L9190/2019/1	White Flag Lake	*Refer to Section 3.1*	*C = Moderate* *L = Unlikely* ***Medium Risk***	Y	Proposed applicant controls: Condition 8 (discharge monitoring during time limited operations)	See Section 3.3

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

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 impacts dewatering discharge to Pope John Pit and White Flag Lake

Dewater chemistry (Hornet Open Pit)

The applicant states that the water quality of mine dewater from Hornet Open Pit is reflective of the Goldfields region. The pH is slightly acidic to neutral between pH of 6 and 7. Groundwater in the Kundana region is hypersaline with field TDS concentrations ranging from 84,100 and 162,100 mg/L.

See Table 4 below for a comparison of water chemistry between Hornet open pit, John Pope Pit and White Flag Lake.

Table 4 Dewater chemistry compared with White Flag Lake and John Pope pit

Analyte	Source pit (Hornet open pit) (most recent data provided)	Pope John Pit (most recent data available)	White Flag Lake (most recent data available)
pH (pH units)	6.47 - 6.72	7.19 – 7.4	7.21 – 7.48
Electrical conductivity (uS/cm)	198,000 – 218,000	176,000 – 214,000	191,000 – 214,000
TDS (mg/L)	245,000 – 261,000	194,000 – 359,000	205,000 – 369,000
TSS (mg/L)	380 - 1110	75 - 279	36 - 90
Total Alkalinity as CACO3 (mg/L)	25 – 37	97 - 161	95 - 158
Sulphate (mg/L)	17,700 – 19,800	11,800 – 31,700	14,400 – 32,200
Chloride (mg/L)	115,000 – 131,000	81,100 – 146,000	109,000 – 176,000
Calcium (mg/L)	546 - 661	290 – 1,320	247 – 1,170
Magnesium (mg/L)	11,000 – 12,400	7,150 – 24,300	9,230 – 24,000
Sodium (mg/L)	69,700 – 76,600	50,600 – 86,900	58,400 – 99,000
Iron (mg/L)	<2.50 – 41.3	<2.50 – 3.56	<2.62 - <5.00
Arsenic (mg/L)	<0.050 – 0.19	<0.050 - <0.105	<0.0.52 - <0.105
Cadmium (mg/L)	<0.0050	<0.0050 - <0.0105	<0.0052 - <0.0100
Chromium (mg/L)	<0.050	<0.050 - <0.105	<0.052 - <0.100
Copper (mg/L)	<0.050 – 0.112	<0.050 -<0.105	<0.052 - <0.105
Lead (mg/L)	0.09 – 0.179	<0.050 -<0.105	<0.052 - <0.105
Nickel (mg/L)	0.085	<0.050 -<0.105	<0.052 - <0.105
Zinc (mg/L)	<0.250	<0.250 - <0.525	<0.262 - <0.525
WAD Cyanide (mg/L)	<0.040	<0.040	<0.040

Nitrate (mg/L)	2.04 - 3.82	5.49 – 11.2	4.85 – 6.94

John Pope pit

Pope John Pit operations commenced in 2003 and reached a depth of 67 mbgl. During operations, dewatering was required and once operations had ceased the pit water levels recovered to an equilibrium with the surrounding groundwater table.

Discharge to White Flag Lake via Pope John Pit has the benefits of regulating the volume of water and allows sediment to settle prior to transfer pumping to the White Flag Lake.

White Flag Lake

Dewatering effluent from the Kundana mine site is discharged via a pipeline to the White Flag Lake. The lake is naturally saline, however the discharge of hypersaline water from Kundana has resulted in additional salt loading, with an extensive halite crust evident on the surface of the lake.

The applicant provided the most recent Annual Ecological Assessment (2021) and the following information was provided:

- Surface water quality was reflected with the dewatering discharge, by circumneutral pH, hypersalinity (>190,000 mg/L), with total nitrogen exceeding concentrations of total phosphorus. Concentrations of metals and trace elements were typically low however analytical detection limits of reporting for chromium, copper, lead and zinc were greater than the Australian and New Zealand guidelines (ANZG 2018) values. Long-term data, generally limited to the discharge sites, showed there were no cumulative trends for metals in surface water.
- The sediment quality was assessed as mildly to moderately alkaline. An extensive salt crust was evident across most of the lake, attributed to the dewatering discharge. However, the salt crust thickness was substantially lower compared to 2020.
- During the 2021 Ecological assessment a total of nine diatom taxa from five genera were recorded. Species diversity was higher than 2019 and 2020 assessments, and comparable to most other years since 2005. There are some exceptions in 2012, 2013, and 2014 assessments that recorded more than 10 taxa and were associated with higher rainfalls. Diatom diversity and abundance was considered low during the 2021 Ecological Assessment. The abundance is similar to what was recorded during the 2020 assessment. Common salt lake taxa including *Hantzschia amphioxys, Hantzschia sp. aff. baltica and Pinnularia borealis* were identified and have been consistently recorded.
- Riparian vegetation assessed as part of the Ecological Assessment found a total of 33 plant taxa from 11 families from the riparian zone of White Flag Lake. Diversity was similar to the 2020 assessment. The vegetation was dominated by the family *Chenopodiaceae*, comprising at least 16 taxa. Average plant diversity, cover, density and health were typically lower at the discharge sites compared to the control sites. However, most sites showed signs of improvement from the 2020 assessment.

The following recommendations were included as part of the Annual Ecological Assessment (2021):

- Continue with the annual monitoring program to determine changes in the salinity and metal concentrations in water and sediment, and assess aquatic biota and riparian vegetation to potential dewatering impacts;
- Increase the limit of reporting for metal concentrations within surface waters for assessment against the ANZG (2018) default guidelines values;

- Conduct opportunistic sampling during minor and / or major flood events, to assess abiotic conditions and biological productivity in relation to potential dewatering discharge impacts;
- Assess potential recruitment of riparian vegetation along the lake shoreline following heavy rainfall and adverse changes relate to inundation and / or salt deposition from surface water; and
- During the next major flood event, consider investigating the aquatic invertebrate assemblage of the peripheral wetlands surrounding White Flag Lake, to provide greater understanding of the diversity and productivity of the lake within a regional context.

Applicant proposed controls

Existing licence controls:

- The Licence Holder shall undertake an assessment of dewatering discharge and shall provide a dewatering discharge report to the CEO. This report shall show the impacts of the mine dewatering discharges to the receiving environment, consistent with the requirements specified.
- Monitoring of points source emissions to surface water (White Flag Lake) include pH, TDS, TSS, arsenic, cadmium, chromium, copper, lead, nickel, sulphate, nitrate, carbonate, bicarbonate, sodium, magnesium, calcium, iron, potassium and chlorine on a quarterly basis. The water in White Flag Lake is sampled quarterly from a sample point located approximately 400m from the discharge point.
- An Ecological Assessment is carried out annually that includes surface sediment. Samples are taken from nine sample points on the lake, including two control points.

DWER assessment

It is expected that the risk of impacts to White Flag Lake from dewatering at Hornet Open Pit will be **Moderate** due to the water quality of the source and receiving surface water being similar. The likelihood of impacts occurring has been determined to be **Unlikely.** The overall risk for this risk event has therefore been determined to be **Medium**.

For this works approval and the short duration associated with Time Limited Operations, existing licence controls will be sufficient in managing risk associated with dewatering from Hornet Open Pit to White Flag Lake. However, DWER recommends that at the licence application stage, further risk assessment take place and some of the recommendations of the 2021 Annual Ecological Assessment for White Flag Lake be conditioned.

4. Consultation

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

Table 5: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 25/11/2022	None received	N/A
Marlinyu Ghoorlie Aboriginal Corporation was advised of the proposal on	No comments received.	N/A

20/01/2023		
Maduwongga Aboriginal Corporation was advised of the proposal on 20/01/2023	No comments received.	N/A
The Department of Planning, Lands and Heritage was advised of the proposal on 20/01/2023	DPLH provided the following comments on 8 February 2023: • After reviewing the project's development footprint as depicted in the provided maps against the Register of Places and Objects, as well as the DPLH Aboriginal Heritage Database, I can confirm that the proposed infrastructure does not intersect with any known Aboriginal heritage places or sites. As it currently stands, approvals under the *Aboriginal Heritage Act 1972* (AHA) are not required. • It was noted by DPLH that Aboriginal Heritage Surveys were undertaken in 2020 across the Project area with both relevant Native Title Claimants, Marlinyu Ghoorlie and Maduwongga (O'Connor 2020a and 2020b). No new heritage sites were identified during the surveys. DPLH does not appear to have a copy of the referenced 2020 O'Connor Report on file, and it would be appreciated if the proponent provide DPLH with a copy for their records. • It is also noted by DPLH that Evolution Mining currently has Aboriginal Agreements in place with the Maduwongga and the Marlinyu Ghoorlie people, and it is encouraged ongoing consultation with both parties as the project progresses.	The Department notes the provided comments and will advise the applicant to provide a copy of the requested reports to DPLH.
Applicant was provided with draft documents on 14/02/2023	Refer to Appendix 1	Refer to Appendix 1

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.

For this works approval and the short duration associated with Time Limited Operations, existing licence controls will be sufficient for managing risk associated with dewatering from Hornet Open Pit to White Flag Lake. However, DWER recommends that at the licence application stage, further risk assessment take place and some of the recommendations of the 2021 Annual Ecological Assessment for White Flag Lake be conditioned.

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. Botanica Consulting 2020, Kundana Reconnaissance Flora / Vegetation Survey and Basic Fauna Survey
5. Aquaterra 2003, Hydrological and Pit Inflow Assessment, Evolution Mining.
6. Aquaterra 2003, Surface Water Management Strategy for Hornet Pit
7. Evolution Mining, 2022, Response to Requested Further Information for Works Approval (Hornet Dewatering)
8. Stantec February 2022, White Flag Lake, Annual Ecological Assessment 2021
9. Annual Dewatering Discharge Report, Kundana Gold Mine, February 2022
10. White Flag Lake, Annual Ecological Assessment, 2021
11. Australian and New Zealand guidelines for fresh and marine water quality, (ANZG) 2018

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Comment / Condition	Summary of applicant's comment	Department's response
Please provide water chemistry information for the Hornet Open Pit.	Hornet Groundwater chemistry has been provided to the Department as Table 1 of Response to requested further information for Works Approval Application (Hornet Open Dewatering) on 02 November 2022.	Hornet pit water chemistry information has been included in the Decision Report.
Please provide the permeability of the HDPE lining proposed for the Kundana transfer dam.	The existing Kundana transfer dam is not a part of this works approval application, however the Hornet dam will be constructed as part of this works approval. The Hornet dam will have a HDPE lining of 1mm thickness. Permeability is a measure of the ability of a porous material (often a rock or a unconsolidated material) to allow fluids to pass through it. HDPE is a plastic that is not measured in permeability. There will be no direct discharge as a result of seepage through the HDPE liner	It is noted that the works approval is in reference to Hornet dam and the HDPE liner will be 1mm in thickness. HDPE liners do have a permeability, please see "Water Quality Protection Note 26 – Liners for containing pollutants, using synthetic membranes". Given the chemistry of the dewater quality and associated environmental risk, specification of 1mm thickness rather than permeability in this case will be sufficient. DWER notes that this information is required as a standard for future reference.
1. Table 1.	**Item 1:** The pipeline to be constructed goes from Hornet Pit to the Pope John pipelines, as shown in **Figure 2, Schedule 1.** The pipeline is to be constructed of nominal 160mm HDPE. Telemetry and automatic cut-outs are not practical due to the proposed pipeline configuration as the Pope John pipeline will have two abstraction points and one discharge point. Additionally, it is not expected telemetry or automatic cut-outs will be required as pipelines will be provided with secondary containment sufficient to contain spill for a period equal to the time between routine inspections. "Required to meet the following standards:" should precede the list of standards. **Item 3:** The proposed dam named is Hornet dam. The Hornet dam will be minimum of 1mm HDPE lined. Permeability is a measure of the ability of a porous material (often a rock or an unconsolidated material) to allow	**Item 1:** 'nominal' has not been included in the works approval. Telemetry and automatic cut-outs have been removed from the works approval as the pipelines have been provided with sufficient containment to contain spills for a period equal to the time between routine inspections. "Required to meet the following standards" has been moved to precede the standards. **Item 3:** The decision document and works approval has been amended to reference Hornet dam. It is noted that the HDPE liner is 1mm in thickness. HDPE liners do have a permeability, see previous detail regarding Water Quality Protection Note 26. This information is required as a standard for future reference.

Comment / Condition	Summary of applicant's comment	Department's response
	fluids to pass through it. HDPE is a plastic that is not measured in permeability. There will be no direct discharge as a result of seepage through the HDPE liner. The capacity of the dam will be approximately 6,043 kL. This is sufficient to handle the expected dewatering volume and high rainfall events. A freeboard of 1.0m will be maintained and a float system installed to manage the water level and prevent overtopping if required. If unexpectedly high water volumes are encountered, excess water will be discharged to Pope John pit via this float system to prevent overtopping of the dam.	The freeboard of 1.0m for the Hornet dam is noted, and this information has been updated in the Decision Report and Works approval.
6	Proposed discharge points are Hornet dam, and Pope John pit as depicted in **Schedule 1, Figure 1.**	Reference to White Flag Lake discharge point has been removed from the works approval as the discharge is managed through the current licence L9190/2019/2.
7 Table 2	The proposed dam (Hornet dam) will be constructed above ground level (pip crest level), therefore, any vertical freeboard cannot be maintained below pit crest level. This works approval application is for dewatering to discharge to Pope John Pit from Hornet Open Pit as shown in **Figure 1, Schedule 1.** White Flag Lake is not included as part of this application, nor within the premises boundary. Operational requirements of White Flag Lake are managed through the Operating Licence L9190/2019/2.	Reference to White Flag Lake discharge point has been removed from the works approval as the discharge is managed through the current licence L9190/2019/2. DWER will undertake further assessment of White Flag Lake at the licence application stage. See section 3.3 for further detail.
8 Table 3	Standing level is recorded quarterly at Pope John pit. Standing water level spot samples are standard practice for pit water levels opposed to continuous monitoring devices. A water balance for Pope John pit, as well as requested information on pit capacity, has been provided to the Department as *Response to requested further information for Works Approval Application (Hornet Dewatering) on 02 November 2022.* The provided information satisfactory evidence that dewatering discharge to Pope John Pit to Hornet Open pit is not expected to breach 6m freeboard and the current L9190/2019/2 monitoring program is sufficient.	Table 8 has been updated to monitor the standing water level quarterly, by spot sample.
Schedule 1 Figure 1	Labelled map has been provided. Hornet dam was incorrectly labelled.	The updated maps have been included in the decision report and works approval.
Schedule 1, Figure 2	Labelled map has been provided. Hornet dam was incorrectly labelled.	The updated maps have been included in the decision report and works approval.

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY
Application type
Licensing Officer: you are to validate the application package to ensure that information provided is complete and accurate. In order to complete this task, you must complete Sections 1, 2, 3 and 4. If further information is required from the applicant during validation then complete Section 6. Delegated Officer: you are to check that the validation has been undertaken appropriately and endorse that there is sufficient information to commence assessment. In order to complete this task, you must review Sections 1, 2, 3 and 4 and complete Section 5. If the Licensing Officer has determined that further information is required you must also review Section 6. Notes: Red text is optional/guidance text. Green text is instructional text.

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		13/09/2022			
Applicant and Premises details					

Applicant name/s (full legal name/s)	Evolution Mining (Mungari) Pty Ltd
Premises name	Evolution Mining
Premises location	M15/669 M16/72, M16/87, M16/97, M16/157, M16/309, L16/105
Local Government Authority	Shire of Coolgardie
Application documents	
HPCM file reference number:	DWERDT658207
Key application documents (additional to application form):	*Kundana Reconnaissance Flora / Vegetation Survey and Basic Fauna Survey*
Scope of application/assessment	
Summary of proposed activities or changes to existing operations.	*Works approval* Construction of: Construction of a new pipeline (500m) from the Hornet Open Pit via the Kundana Dam to the existing dewatering pipeline at the RHP Underground Operation. Water from dewatering is then transported via existing pipeline (4.5km) to the discharge into the Pope John Open Pit. Time limited operational phase involving abstraction and discharge of groundwater from the Hornet Open pit.

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	2,000,000	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: M15/669 Kundana Gold Pty Ltd M16/72 Kundana Gold Pty Ltd M16/87 Kundana Gold Pty Ltd M16/97 Kundana Gold Pty Ltd M16/157 Kundana Gold Pty Ltd M16/309 Rand Exploration NL L16/105 Kundana Gold Pty Ltd Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date Mining tenemnets.
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☒ No ☐	CPS No: CPS 9782/1 Clearing approved by DMIRS
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
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:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☐ No ☒	Name: N/A Type: Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☐ Regional office:

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 (Controlled waste) regulations 2001* *Explosives and Dangerous Goods Act 1961* *Mine 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 *Contaminated Sites Act 2003*?	Yes ☒ No ☐	Awaiting classification. Classification: N/A Date of classification: N/A