



Application for Works Approval

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

Works Approval Number W6810/2023/1

Applicant Abra Mining Pty Limited

ACN 110 233 577

File number DER2023/000324

Premises Abra Base Metals Project
MEEKATHARRA WA 6642
Legal description –
Part of mining tenements L52/194, M52/776,
G52/292 and L52/210
As defined by the premises maps in Schedule 1

Date of report 20 July 2023

Decision Works approval granted

A/MANAGER, RESOURCE INDUSTRIES

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, commissioning, and operation of the premises. As a result of this assessment, works approval W6810/2023/1 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 9 May 2023, 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 184 kilometres (km) northeast of Newman, WA.

The premises relates to the category 6 – mine dewatering and assessed production capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6810/2023/1. 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 W6810/2023/1. The infrastructure to be constructed includes the discharge pipeline, water transfer pipeline and infrastructure, and discharge point.

The applicant has noted that some infrastructure required for category 6 prescribed activities have already been constructed under works approval W6205/2018/1. This includes mine dewatering bore, ABDW003 (under the Department's permit CAW207145(1)), Turkeys Nest 1 (TN1) with geosynthetic clay lined (GCL) embankments and a high-density polyethylene (HDPE) lined Turkeys Nest 2 (TN2), and an unlined borrow pit within the tailings storage facility (TSF) cell B as shown in Figure 1. The borrow pit is an excavation where gravel was removed for construction purposes and will be re-purposed as a water storage dam for the mine dewatering water to provide further sediment settlement.

Figure 1 displays the current mine dewatering water discharge pathway, whilst Figure 2 displays the proposed mine dewatering water discharge pathway that includes the discharge point to Grave Creek once this works approval has been issued.

The category 6 prescribed activity was previously requested under an amendment to works approval W6205/2018/1, however, the Department advised that this could not proceed under the amendment assessment as a new category would require a new works approval and adequate assessment time. The Department advised the applicant for a new works approval application to be submitted, this application.

3. Overview of premises

3.1 Siting

3.1.1 Surface hydrology

The Premises is located in the upper tributary zone of the Ashburton River and the Gascoyne River catchment is south of the Premises' boundary. Numerous ephemeral creeks and their associated tributaries occur within and around the Premises, with two major drainage lines, Grave Creek and Five Mile Creek located to the east and west of the Premises, respectively. These ephemeral creeks are typically dry and flow for short periods after rainfall events.

Grave Creek is the considered option as the drainage line for mine dewatering to be discharged into. There are no nearby environmental sensitive receptors at the proposed discharge point, with the nearest being Nichol Springs that is the only permanent water pool and is also a registered Aboriginal heritage site and is approximately 20 km from the proposed discharge point (Figure 3). Furthermore, this site will not be impacted by the mine dewater discharge route as Nichol Springs is just south along Ethel River and not where Grave Creek and Ethel River join further north from the heritage site.

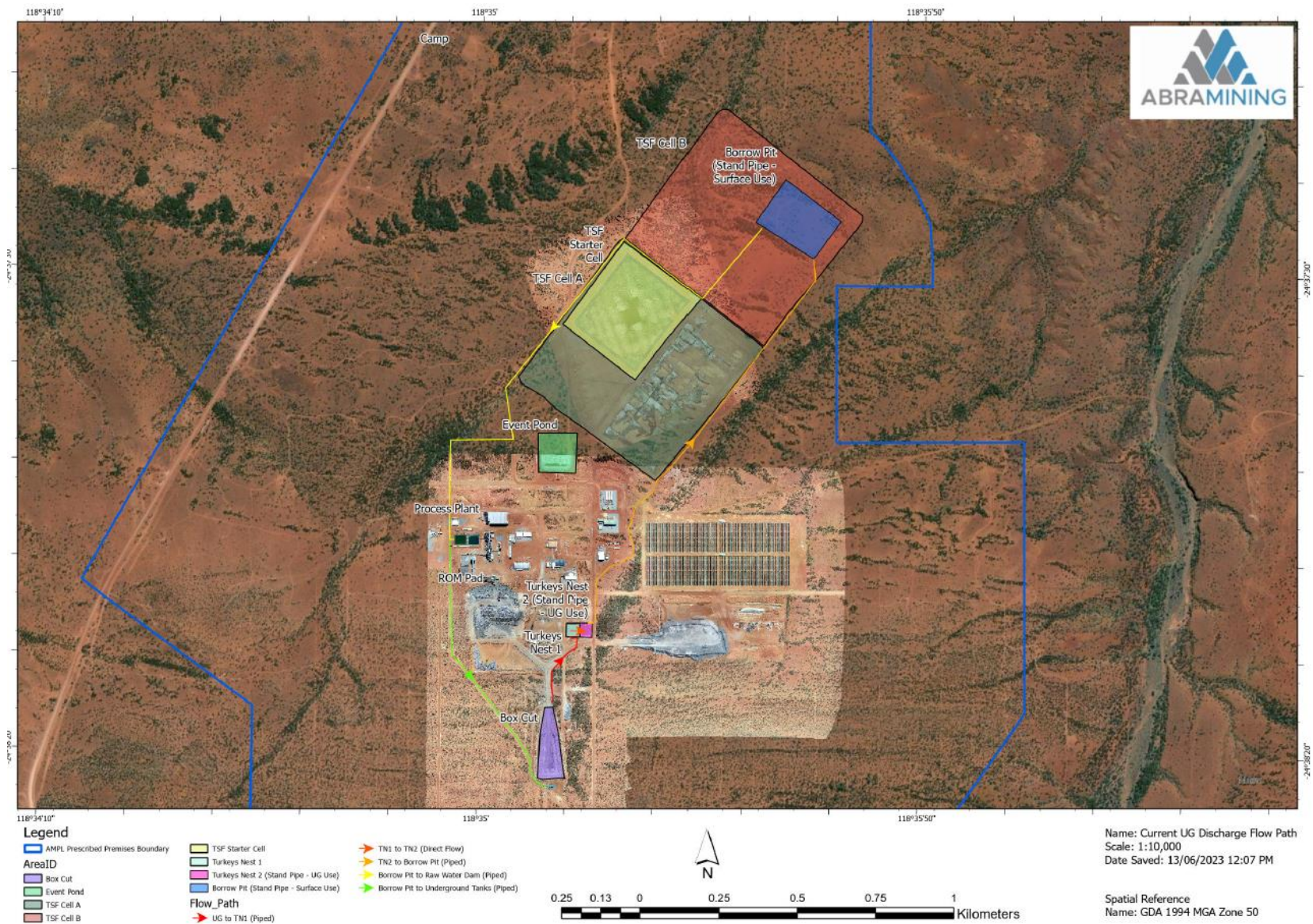


Figure 1: Mine dewatering infrastructure and layout and current mine dewatering water discharge pathway

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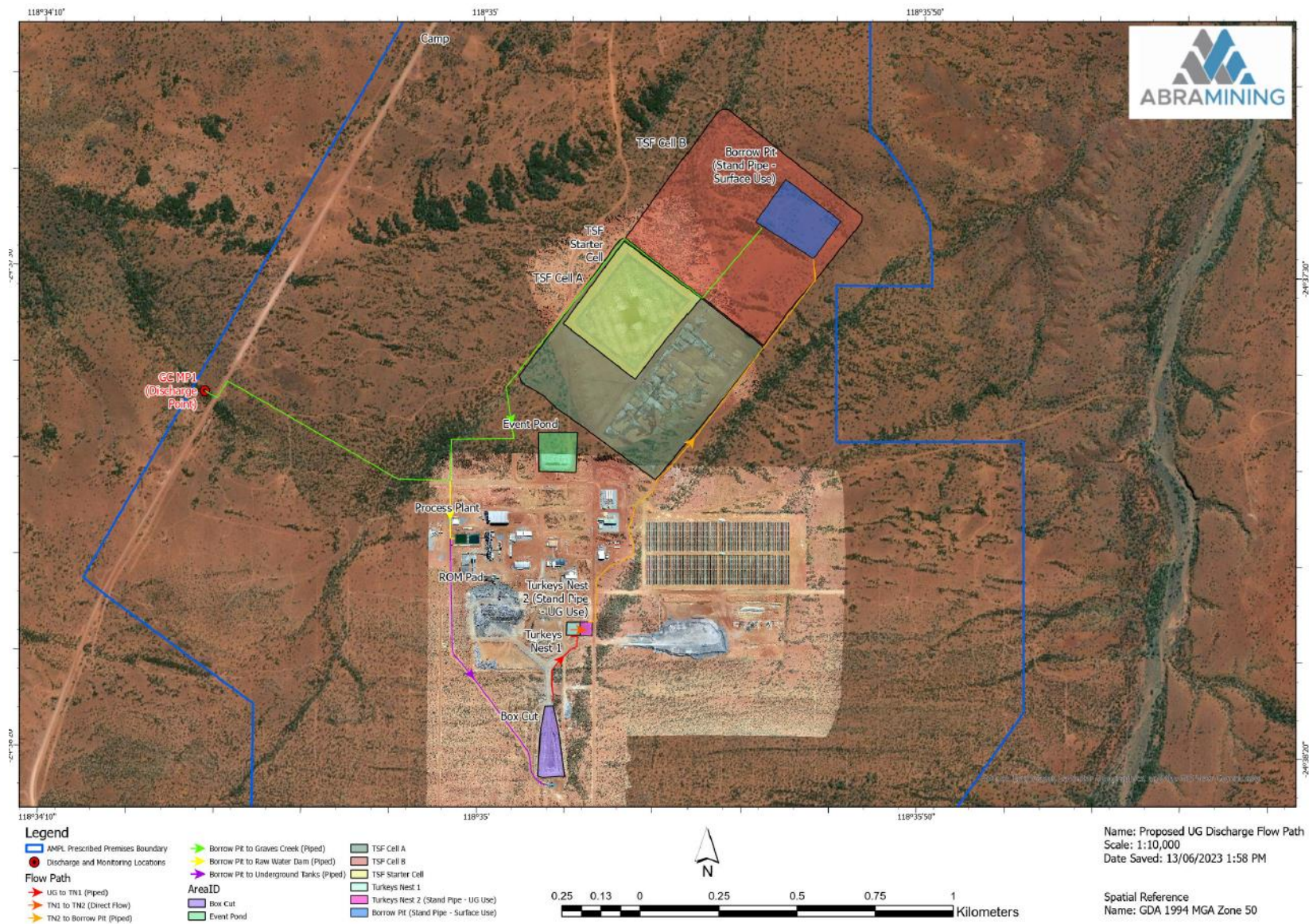


Figure 2: Proposed mine dewatering water discharge pathway and discharge point

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IR-T13 Decision report template (short) v3.0 (May 2021)

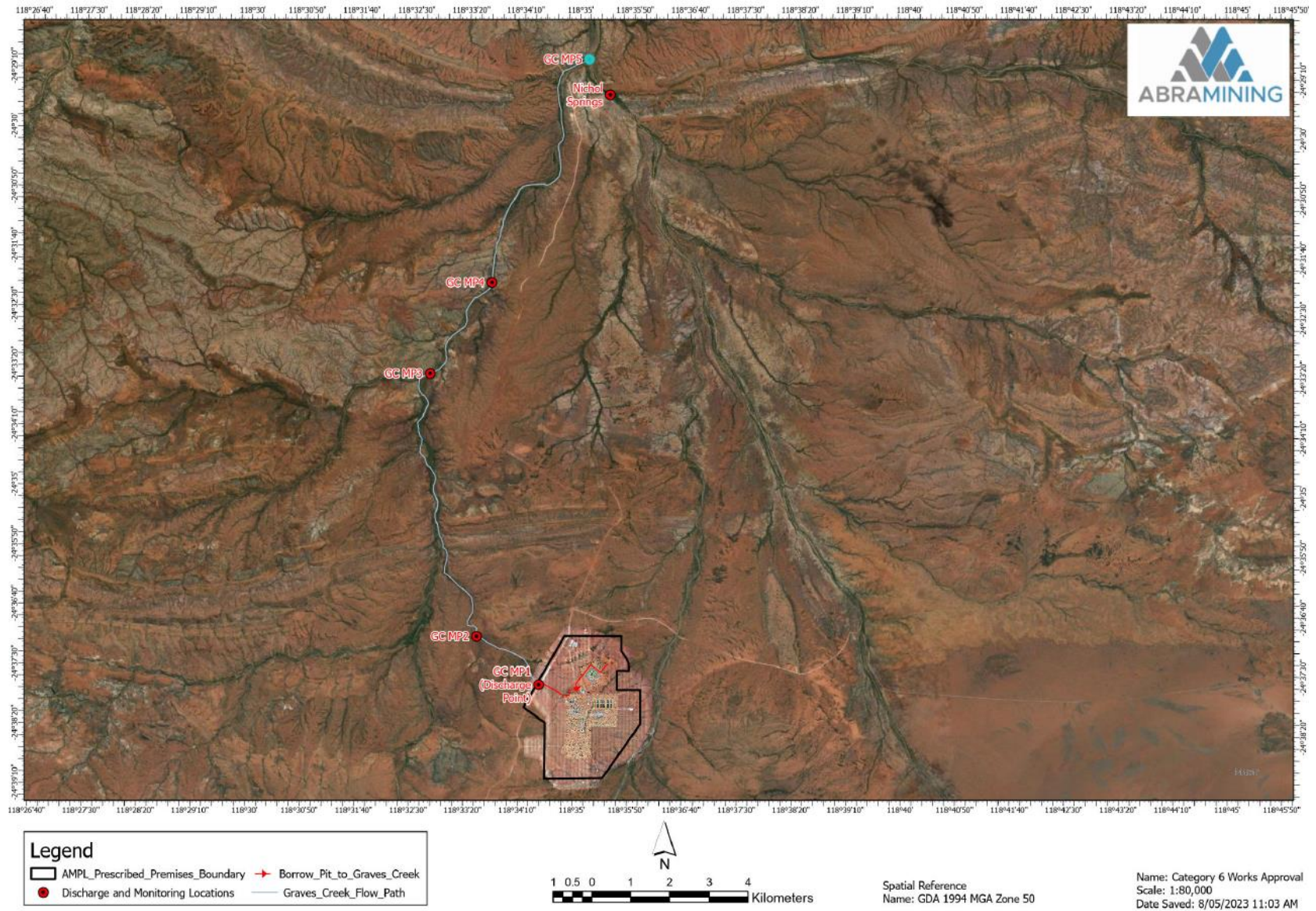


Figure 3: Mine dewatering water discharge route, monitoring locations and sensitive receptors

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3.1.2 Groundwater and water quality

Groundwater in and around the Premises is considered good quality and suitable for livestock drinking, potable or industrial use. Groundwater depth ranges from 16 to 54 metres below ground level (mbgl).

Water quality was analysed from the dewatering bore, ABDW003 and the borrow pit (the final settlement stage), which were compared to the ANZECC & ARMCANZ (2000) water quality default guideline values in Table 1.

The water quality results indicate that the quality of the water from the borrow pit that would be discharged to Grave Creek meets Drinking water quality guideline values (Table 1).

Table 1: Water quality results for ABDW003 and the borrow pit

| Parameter | Unit | ABDW003 | Borrow Pit | ANZECC & ARMCANZ (2000) | | | | |
|---|---------------------------|---------|------------|-------------------------|-----------------|-----------------|-----------------|-----------|
| | | | | Drinking Water | Fresh water 95% | Fresh water 85% | Livestock water | |
| pH | pH | 7.8 | 8.6 | - | - | - | - | |
| Electrical Conductivity | µS/cm | 760 | 920 | - | - | - | - | |
| Total Dissolved Solids (TDS) | mg/L | 500 | 640 | - | - | - | - | |
| Total Suspended Solids (TSS) | | <5.0 | 6.0 | - | - | - | - | |
| Calcium | | 49 | 45 | - | - | - | - | |
| Magnesium | | 40 | 50 | - | - | - | - | |
| Potassium | | 8.3 | 14 | - | - | - | - | |
| Silicon | | 15 | 17 | - | - | - | - | |
| Sodium | | 46 | 62 | - | - | - | - | |
| Hardness as CaCO ₃ | | 290 | 320 | - | - | - | - | |
| Aluminium | | µg/L | <10 | <10 | - | 55 | 150 | 5,000 |
| Arsenic | | | 5.5 | 2.6 | 10 | 24 | 360 | 500-5,000 |
| Barium | 93 | | 120 | 2,000 | - | - | - | |
| Beryllium | <0.50 | | <0.50 | 60 | - | - | - | |
| Boron | 310 | | 410 | 4,000 | 370 | 1,300 | 5,000 | |
| Cadmium | <0.10 | | <0.10 | 2 | 0.2 | 0.8 | 10 | |
| Chromium | <1.0 | | 1.0 | - | - | - | 1,000 | |
| Cobalt | <1.0 | | <1.0 | - | - | - | 1,000 | |
| Copper | <1.0 | | <1.0 | 2,000 | 1.4 | 2.5 | 1,000 (cattle) | |
| Iron | <10 | | <10 | - | - | - | - | |
| Lead | 5.3 | | <1.0 | 10 | 3.4 | 9.4 | 100 | |
| Manganese | 370 | | <1.0 | 500 | 1,900 | 3,600 | - | |
| Mercury | <0.050 | | <0.050 | 1 | 0.06 | 5.4 | 2 | |
| Molybdenum | 1.9 | | 9.9 | 50 | - | - | 150 | |
| Nickel | <1.0 | | 1.4 | 20 | 11 | 17 | 1,000 | |
| Selenium | <1.0 | | <1.0 | 10 | 5 | 34 | 20 | |
| Strontium | 180 | | 220 | - | - | - | - | |
| Titanium | <1.0 | | <1.0 | - | - | - | - | |
| Vanadium | <1.0 | | 1.2 | - | - | - | - | |
| Zinc | 6.4 | | 2.8 | - | 8 | 31 | 20,000 | |
| Ionic Balance | % | -7.5 | -12 | - | - | - | - | |
| Carbonate Alkalinity as CaCO ₃ | mg/L as CaCO ₃ | <5.0 | 22 | - | - | - | - | |
| Bicarbonate Alkalinity as CaCO ₃ | | 240 | 220 | - | - | - | - | |
| Hydroxide OH- as CaCO ₃ | | <5.0 | <5.0 | - | - | - | - | |

| Parameter | Unit | ABDW003 | Borrow Pit | ANZECC & ARMCANZ (2000) | | | |
|---|------|---------|------------|-------------------------|-----------------|-----------------|-----------------|
| | | | | Drinking Water | Fresh water 95% | Fresh water 85% | Livestock water |
| Total Alkalinity as CaCO ₃ | | 240 | 240 | - | - | - | - |
| Chloride | mg/L | 69 | 92 | - | - | - | - |
| Nitrate as N | | 7.1 | 17 | - | - | - | - |
| Sulfate | | 68 | 97 | - | - | - | - |
| Nitrate as NO ₃ by calculation | | 31 | 76 | - | - | - | - |

3.1.3 Mine dewatering

The applicant requires removal of mine dewatering water by pumping the water from a portal (within the boxcut) to the underground mine (Figure 2). The water will be pumped into TN1 and TN2 for initial settling, then pumped to a an unlined borrow pit in TSF cell B for further settling. The applicant has stated that *“the borrow pit will continue to be utilised to store mine dewatering water for intermittent periods of time. This will allow the discharge of water to the environment to be conducted in intermittent discharges to better replicate the sporadic nature of rainfall in the area.”* In addition, the applicant has stated that *“construction of TSF cell B has been pushed out, which allows for the borrow pit to continue being used as a settling location. Abra will investigate alternatives to replace the borrow pit, so that they can be put in-place prior to construction of TSF cell B.”* Several mine dewatering water storage areas to be used provide for subsequent settling time, which is evident by the results in Table 2. Water will then be pumped from the borrow pit to the proposed discharge point location with a velocity dissipator installed at this discharge point as shown in Figure 2.

The applicant has stated the following *“TN1... walls are lined with GCL however the base was not lined as initially the intention was to use a digger to clean the TN out and this would have resulted in tearing the liner on the base. Abra has since determined that the TNs can be emptied via a sludge pump. As such Abra will commit to lining TN1 with HDPE. It is likely that this will occur in conjunction with construction of TSF Cell A and will be completed by November of 2023.”*

It should be noted that the unlined borrow pit in TSF cell B was excavated from July 2021 and October 2022, where the material was used for the construction of the accommodation village and then backfilled with off spec material from the construction of the airstrip. The borrow pit will be integrated into the base of cell B and then lined for the purpose of a TSF cell.

The velocity dissipator is located at the outlet of the discharge pipeline and will be composed of an old tyre at the end of the pipeline and a large rock apron to reduce erosion and scour of the surrounding surface environment.

Table 2: Water quality analysis from the underground pipe and mine dewatering water storage areas

| Parameter (Method) | Unit | UG discharge (April 2023) | TN2 (April 2023) | Borrow pit (April 2023) |
|---------------------|------|---------------------------|------------------|-------------------------|
| pH (in water) | pH | Not sampled (NS) | NS | NS |
| TDS (in water) | mg/L | 620 | 580 | 570 |
| TSS | | 1300 | 84 | 13 |
| Lead (Dissolved) | µg/L | 110 | 65 | 1 |
| Copper (Dissolved) | | <1 | <1 | <1 |
| Arsenic (Dissolved) | | 4.2 | 4.7 | 3.6 |
| Nickel (Dissolved) | | 3 | 2 | <1 |
| Cadmium (Dissolved) | | <0.1 | <0.1 | <0.1 |
| Zinc (Dissolved) | | 3.8 | 3.2 | 1.9 |
| Lead (Total) | | 87000 | 1200 | 13 |
| Copper (Total) | | 1700 | 23 | 1.3 |
| Arsenic (Total) | | 180 | 6.3 | 3.7 |
| Nickel (Total) | | 45 | 4.1 | 1.6 |
| Cadmium (Total) | | 23 | 0.16 | <0.1 |
| Zinc (Total) | | 9900 | 60 | 4.5 |

3.1.4 Discharge point and rate

Rockwater (2022) undertook an assessment and modelling to identify the suitable creek for discharge, discharge rate and extent of mine dewatering water flowing within the creek. Table 3 presents the discharge extents along the proposed creek, Grave Creek at pumping discharge rates of 10 litres per second (L/s), 20 L/s, 30 L/s and the rate to flow the total length of the creek and reach Nichol Springs. In addition, the extent that the pumped discharge water would flow is when the creek is dry with no runoff. The assessment also identified that Grave Creek has a longer section of a wide creek bed that would aid in a larger discharge flow and provide a greater area for losses to occur.

The proposed maximum discharge rate will be 20 to 30 L/s (630,720 kL/yr to 946,080 kL/yr) from the discharge point location.

The applicant has stated that “the total monthly volume of discharge to Grave Creek in the first year is estimated to be 65,700 kL/month”.

Table 3: Discharge rate and extents

| Discharge rate (L/s) | Discharge rate (kL/day) | Extent (km) |
|----------------------|-------------------------|-------------|
| Grave Creek | | |
| 10 | 864 | 7.0 |
| 20 | 1,728 | 9.0 |
| 30 | 2,592 | 11.0 |
| 77 | 6,653 | 21.5 |

3.2 Monitoring

3.2.1 Water quality

The applicant has indicated that water quality monitoring will be undertaken weekly of the discharged water at the specified monitoring locations (refer to Schedule 1: Maps, Figure 3 and

4 of this works approval) and water quality parameter values compared against ANZECC & ARMCANZ (2000) water quality guideline values.

3.2.2 Sediment and vegetation health

The applicant has proposed to undertake sediment monitoring prior to discharging water in the creek, on a six-monthly basis during discharge and conclusion of the discharge period. Sediment monitoring results will be compared against ANZECC & ARMCANZ (2000) sediment quality guideline values.

In addition, the applicant will monitor riparian vegetation health fortnightly during commissioning and monthly during time limited operations at the discharge point monitoring locations along the creek line. The applicant has proposed the following actions if there is an observed decline in vegetation health:

- increase frequency of vegetation monitoring;
- determine that the decline in vegetation health is due to discharge water and no other external environmental factors; and
- if vegetation health decline is determined due to impacts of the discharge water, discharging activities will cease and further vegetation monitoring will commence to assess recovery of vegetation health.

4. 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 2020a).

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.

4.1 Source-pathways and receptors

4.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction, commissioning, and operation which have been considered in this decision report are detailed in Table 4 below. Table 4 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 4: Proposed applicant controls

| Emission | Sources | Potential pathways | Proposed controls |
|---------------------|---|-------------------------|--|
| Construction | | | |
| Dust | Construction of discharge pipeline, discharge point, and water transfer pipeline and infrastructure. Vehicle movements | Wind / airborne pathway | <ul style="list-style-type: none"> • no sensitive receptors present and will not be risk assessed under section 4.2, Table 6. |

| Emission | Sources | Potential pathways | Proposed controls |
|---|---|---|---|
| Commissioning | | | |
| Mine dewatering water discharge | Commissioning of discharge pipeline, discharge point, and water transfer pipeline and infrastructure | Direct discharge through leaks and faults | <ul style="list-style-type: none"> • testing for leaks in the pipelines; • water quality sampling and analysis of water prior to discharge to ensure all parameters are within ANZECC & ARMICANZ (2000) water quality guideline values; and • verify actual flow against the model predictions of the flow extent, where variation to the discharge rate may be required for optimum flow extent. |
| Time-limited operation | | | |
| Spillage of mine dewatering water from rupture or leaks of dewatering pipelines | Transportation of mine dewatering water by pipelines | Direct discharge and/or seepage | <ul style="list-style-type: none"> • daily visual inspections (during active dewatering) to ensure visual integrity of pipelines and no potential leaks; • operate and maintain flow meter and pressure meters on the pipelines; and • weekly water quality monitoring at the storage containment structures against ANZECC & ARMICANZ (2000) Fresh and Marine water quality values. |
| Sediment laden mine dewatering water | <p>Mine dewatering water discharge to TN1 and TN2, unlined borrow pit from the box cut (underground mine)</p> <p>Scouring</p> | Overtopping / overfilling | <ul style="list-style-type: none"> • TN1 and TN2 controls: <ul style="list-style-type: none"> ○ TN2 has a level sensor set up to automatically turn on the diesel pump; ○ secondary pumping capabilities at the TN2 that must be utilised in the event that the primary pump fails; ○ diversion drains must be installed around the southern and western edge of the TNs; ○ daily visual inspections must be undertaken of the integrity / potential leaks of the TN1 and TN2; ○ TN1 and TN2 storage capacity of 3,000 kL (per TN) are not to be exceeded; ○ minimum vertical freeboard of 0.5 m must be maintained for TN2 as TN1 is designed to overflow via a spillway into TN2 • Borrow pit controls: <ul style="list-style-type: none"> ○ staff gauge must be installed for the borrow pit; ○ daily visual inspections must be undertaken of the integrity / potential |

| Emission | Sources | Potential pathways | Proposed controls |
|---------------------------------|--|--|---|
| | | | leaks; <ul style="list-style-type: none"> ○ Borrow pit storage capacity of 200,000 kl is not to be exceeded; and ○ minimum vertical freeboard of 0.5 m must be maintained |
| Mine dewatering water | | Seepage of leachate through the base and embankments of the borrow pit | <ul style="list-style-type: none"> • weekly vegetation monitoring from TSF bore, MB3; • weekly groundwater quality monitoring from TSF bores MB3 and MB5 (installation of MB5 by September 2023); and • review and update the water balance within six months of the works approval being issued. |
| Mine dewatering water discharge | Mine dewatering water discharge to Grave Creek | Direct discharge | <ul style="list-style-type: none"> • sampling event to be undertaken after a rainfall event when no discharge is scheduled, to provide background levels; • model discharge rate down the creek line to identify equilibrium point of water run; • discharge rate to be regulated to avoid inundation of heritage sites; • weekly monitoring of discharge of mine dewater water down creek line to verify model prediction; • monthly discharge volumes recorded; • maintain and operate flow meter at the discharge point; • maintain the velocity dissipator area at the discharge point to reduce / prevent erosion and scour to the surrounding surface environment; • vegetation monitoring at the monitoring discharge points along the creekline of Grave Creek; and • sediment monitoring at the monitoring discharge points along the creekline of Grave Creek. |

4.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020a), 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.

Table 5 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 2020b)).

Table 5: Sensitive human and environmental receptors and distance from prescribed activity

| Human receptors | Distance from prescribed activity |
|--|---|
| No nearby human receptors | Mulgul Station homestead is more than 20 km southwest from the prescribed premises boundary. Nearest occupied pastoral station homestead is approximately 45 km from the premises boundary. |
| Environmental receptors | Distance from prescribed activity |
| Priority (P) Flora 1. <i>Eremophila humilis</i> P1 2. <i>Eremophila gracillima</i> P3 | 1. Within prescribed premises boundary. Approximately 900 m north of the prescribed premises boundary. |
| Aboriginal sites and heritage places 1. Mile Creek 04 – artefacts / scatter, arch deposit, water source 2. Mile Creek 05 – artefacts / scatter, arch deposit 3. Mile Creek 06 – artefacts / scatter, arch deposit 4. Ethel Creek Scatter 1 – artefacts / scatter 5. Ethel Creek Scatter 2 – artefacts / scatter 6. Ethel Creek Scatter 3 – artefacts / scatter | All within the prescribed premises boundary. |
| Hydrology (ephemeral creeks and spring) 1. Ethel River and associated tributaries 2. Grave Creek and associated tributaries 3. Nichol Springs | 1. Ethel River is approximately 3.7 km east of the prescribed premises boundary, with tributaries (5 Mile Creek) flowing through premises (mainly in mining tenement M52/776). 2. Grave Creek is approximately 3.3 km northwest of the prescribed premises boundary, with tributaries near the west side of the prescribed premises boundary. 3. Approximately 19 km along the creekline. Spring is avoided by discharging to a tributary (Grave Creek) that enters Ethel River downstream of Nichol Springs. |
| Proclaimed area (RiWI Act) <i>East Murchison Groundwater Area</i> | Within prescribed premises boundary. |
| Groundwater | Peak Hill – unnamed groundwater bore located approximately 3.8 km northwest and Peak Hill – Chalk Springs groundwater bore is located approximately 4.3 km northeast from the prescribed premises boundary. |

4.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020a) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 4.1. 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 4.1), 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 6.

Works approval W6810/2023/1 that accompanies this decision report authorises construction, commissioning, and time-limited operations. The conditions in the issued works approval, as outlined in Table 6 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 6: 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 | | | | |
| Commissioning | | | | | | | | |
| Commissioning of discharge pipeline, discharge point, and water transfer pipeline and infrastructure. | Mine dewatering water discharge | Direct discharge through leaks and faults | Soil / land Native vegetation, particularly priority flora | Refer to Section 4.1 | C = Slight L = Rare Low Risk | Y | Conditions 1, 5, 6, 7, 8, 9, 10, 11, & 12 | N/A |
| Time-limited operation | | | | | | | | |
| Transportation of mine dewatering water by pipelines | Spill of mine dewatering water from rupture or leaks of dewatering pipelines | Direct discharge and/or seepage causing deterioration in soils and inundation of vegetation and erosion | Native vegetation, particularly priority flora Soil / land | Refer to Section 4.1 | C = Minor L = Possible Medium Risk | Y | Conditions 13, 14, 15, 16, 22 and 23 | N/A |
| Mine dewatering water discharge to TN1, TN2, and borrow pit from the box cut (underground mine) Scouring | Sediment laden mine dewatering water | Overtopping / overflowing causing direct discharge and potential overland runoff of the TN1, TN2, and borrow pit causing impacts to vegetation, surface land / soils, and surface water | Native vegetation, particularly priority flora Soil / land Surface water and nearby drainage lines Aboriginal Sites and heritage places | Refer to Section 4.1 | C = Moderate L = Unlikely Medium Risk | Y | Conditions 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23 | N/A |
| | Mine dewatering water | Seepage of leachate through base and embankments of | Native vegetation, particularly priority flora | Refer to Section 4.1 | C = Moderate L = Unlikely | Y | Conditions 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23 | N/A |

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| 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 | | | | |
| | | the borrow pit causing impact to groundwater, groundwater mounding and vegetation | Groundwater | | Medium Risk | | | |
| Mine dewatering water discharge to Grave Creek | Mine dewatering water discharge | Direct discharge causing alteration of creek water chemistry, impacts to riparian vegetation and erosion | Soil / land Grave Creek and associated minor tributaries Native vegetation, particularly priority flora | Refer to Section 4.1 | C = Moderate L = Possible Medium Risk | Y | Conditions 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, and 23 | N/A |

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

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

5. Consultation

Table 7 provides a summary of the consultation undertaken by the department.

Table 7: Consultation

| Consultation method | Comments received | Department response |
|---|---|---|
| Application advertised on the department's website on 26 June 2023 | No comments received | - |
| Local Government Authority advised of proposal on 21 June Month 2023 | No comments received | - |
| Jidi Jidi Aboriginal Corporation (JJAC) advised of proposal on 22 June 2023 | No comments received | - |
| Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal on 21 June Month 2023 | DMIRS has no comments on the proposal. | - |
| Department of Planning, Land, and Heritage (DPLH) advised of proposal on 21 June Month 2023 | DPLH has no comments on the proposal. DPLH has indicated to note impacts to Mulgul Station Pastoral Lease N049800 and to obtain consent from the Pastoral Lessee. | Applicant to ensure there are no impacts to the Mulgul Station Pastoral Lease N049800 and to obtain consent from the Pastoral Lessee. |
| Applicant was provided with draft documents on 30 June 2023 | Applicant provided comments on 17 July 2023 and are detailed in Appendix 1. | The department's responses are provided in Appendix 1. |

6. 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. Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australia.
2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
3. Department of Water and Environmental Regulation (DWER) 2020a, *Guideline: Risk Assessments*, Perth, Western Australia.
4. DWER 2020b, *Guideline: Environmental Siting*, Perth, Western Australia.

5. Rockwater 2022, *Excess Water Discharge Assessment – November 2022*, report prepared for Abra Mining Pty Ltd, Western Australia.

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

| Condition | Summary of applicant's comment | Department's response |
|-----------------------|--|--|
| Works approval | | |
| 1 Table 1 | <p>In reference to installation requirements for the pipelines:</p> <ul style="list-style-type: none"> <i>equipped with secondary alarms, telemetry systems and pressure sensors to detect leaks and failures</i> <i>construction of V trench or graded earthen windrows with sufficient capacity to contain spills and leaks</i> <p>Abra considers this condition to not be required. These pipes will contain clean water being pumped at a low velocity. The discharge will only occur during day shift and will be inspected each day.</p> | The Department has removed these installation requirements as the pipelines will be transporting mine dewatering water with a quality as of fresh water quality (ANZECC & ARMCANZ 2000). |
| 6 Table 2 | Abra considers these conditions to not be required as per the reasons outlined in Table 1. | The Department has removed these requirements for the reason as above. |
| 6 Table 2 | <p>Note: TN1 is not fully lined with HDPE. The walls are lined with GCL however the base was not lined as initially the intention was to use a digger to clean the TN out and this would have resulted in tearing the liner on the base. Abra has since determined that the TNs can be emptied via a sludge pump. As such Abra will commit to lining TN1 with HDPE. It is likely that this will occur in conjunction with construction of TSF Cell A and will be completed by November of 2023.</p> <p>TN2 is fully lined with HDPE.</p> | <p>The Department has removed the term HDPE lined.</p> <p>The Department has included the applicant's comment under section 3.1.3 of the decision report that TN1 will be HDPE lined around November 2023.</p> |
| 9 | Update condition number | Amended. |
| 11 | Should this be Condition 3? | Amended. |
| 15 Table 4 | <p>In reference to operation requirements:</p> <ul style="list-style-type: none"> <i>operate and maintain alarm sensor, telemetry system and pressure</i> | Amended as above. |

| Condition | Summary of applicant's comment | Department's response |
|---|---|---|
| | <p><i>meter on pipeline.</i></p> <ul style="list-style-type: none"> <i>a minimum vertical freeboard of 0.5 m must be maintained.</i> <i>operate and maintain the primary pump.</i> <p>Abra considers this condition not to be required as discussed in comment on Table 1.</p> <p>TN1 overflows via a spill way into TN2. Maintaining a vertical free-board on TN1 is not required.</p> <p>There is no pump in TN1 as it overflows via a spillway into TN2.</p> | |
| <p>19 Table 6 Applicant to provide parameters and units for sediment monitoring</p> | <p>Parameters:</p> <p>Aluminium (Al)</p> <p>Arsenic (As)</p> <p>Boron (B)</p> <p>Cadmium (Cd)</p> <p>Copper (Cu)</p> <p>Chromium (Cr)</p> <p>Iron (Fe)</p> <p>Lead (Pb)</p> <p>Manganese (Mn)</p> <p>Mercury (Hg)</p> <p>Molybdenum (Mo)</p> <p>Nickel (Ni)</p> <p>Silver (Ag)</p> <p>Tin (Sn)</p> <p>Zinc (Zn)</p> <p>Units: mg/kg</p> | <p>Inclusion of the specified parameters and units.</p> |

| Condition | Summary of applicant's comment | Department's response |
|------------------------|---|---|
| 20 Table 7 | Abra considers this frequency to be additional to requirement to effectively monitor vegetation health during commissioning and TLO and request changing it to fortnightly during commissioning and monthly during TLO. | Amended the following frequency requirements: <i>Fortnightly (during commissioning)</i> <i>Monthly (during time limited operations)</i> |
| Schedule 3 Table 10 | MB3 coordinates Easting - 661,451 and Northing - 7,275,724 MB5 coordinates Easting - 661,323 and Northing - 7,276,034 | Coordinates included as well as MB5 coordinates. |
| Decision report | | |
| Section 2.2 | Turkeys Nest 1 is not HDPE lined. The walls are lined with GCL however the base was never lined as initially the intent was to use a digger to empty the sediment. Abra has since commenced using a sludge pump to empty the sediment. Abra will commit to lining Turkeys Nest 1 with HDPE, this is likely to occur at the same time as the TSF Cell A construction and be completed by November of 2023. | Amended sentence as follows: <i>"...Turkeys Nest 1 with geosynthetic clay lined (GCL) embankments and a high-density polyethylene (HDPE) lined Turkeys Nest 2..."</i> |
| Section 3.1.3 | Construction of TSF Cell B has now been pushed out which allows for the Borrow Pit to continue being used as a settling location. Abra will investigate alternatives to replace the Borrow Pit so that they can be put in-place prior to construction of TSF Cell B. | Inclusion of the following sentence: <i>In addition, the applicant has stated that "construction of TSF cell B has been pushed out, which allows for the borrow pit to continue being used as a settling location. Abra will investigate alternatives to replace the borrow pit, so that they can be put in-place prior to construction of TSF cell B."</i> |
| Section 3.2.2 | Abra considers this frequency to be additional to requirement to effectively monitor vegetation health during commissioning and request changing it to fortnightly. | Amended monitoring frequency from weekly to fortnightly. |
| Section 3.2.2 | In the event that a decline in the health of riparian vegetation at the designated monitoring points is identified, Abra will take the following action. - Increase frequency of vegetation monitoring - Determine that the decline in vegetation health is as a result of discharge water and not other external environmental factors - If vegetation health decline is determined to be as a result of discharge water, cease discharge and increase vegetation health monitoring to assess recovery of vegetation health | Inclusion of the following sentence and subsequent dot points: <i>The applicant has proposed the following actions if there is an observed decline in vegetation health:</i> <ul style="list-style-type: none">• <i>increase frequency of vegetation monitoring;</i>• <i>determine that the decline in vegetation health is due to discharge water and no other external environmental factors; and</i>• <i>if vegetation health decline is determined due to impacts of the discharge water, discharging activities will cease and</i> |

| Condition | Summary of applicant's comment | Department's response |
|--|---|---|
| | | <i>further vegetation monitoring will commence to assess recovery of vegetation health.</i> |
| Section 4.1.1 Table 4 | In reference to 'testing alarm sensors for malfunction' and 'calibration of telemetry and flow meters on the pipelines.' Abra considers these conditions to not be required as per comments in Table 1 of the Draft Works Approval. | The proposed controls have been removed as per the above comment related to condition 1, Table 1. |
| Section 4.1.1 Table 4 Query regarding confirmation of level sensor for TN1 | TN1 is designed to overflow via a spillway into TN2 and as such does not have a pump or level sensor. | No changes. |
| Section 4.1.1 Table 4 | In reference to 'minimum vertical freeboard of 0.5 m must be maintained.' TN1 is designed to overflow via a spillway into TN2 and as such a free-board of 0.5m will not be maintained in TN1 | The proposed control has been amended as follows: <i>"minimum vertical freeboard of 0.5 m must be maintained for TN2 as TN1 is designed to overflow via a spillway into TN2"</i> |
| Section 4.1.1 Table 4 Applicant to provide additional seepage controls | Include Vegetation Monitoring requirement at location MB3. TSF bore, MB5 will be installed in September of 2023 and will be used to monitor seepage from the Borrow Pit. MB5 (Coordinates 661,323E & 7,276,034N). A new figure has been provided showing the location of the TSF Monitor Bores. Rockwater prepared a report in 2022 on the TSF Cell B permeability concluding that permeability was generally low. Report has been attached. The Borrow Pit has been in use for a number of months and no surface seepage has been identified. | The proposed control has been amended as follows: <ul style="list-style-type: none"> <i>weekly vegetation monitoring from TSF bore, MB3;</i> <i>weekly groundwater quality monitoring from TSF bores MB3 and MB5 (installation of MB5 by September 2023); and</i> |
| Section 4.1.1 Table 4 | Water quality monitoring will be conducted weekly during commissioning and TLO. | Inclusion of the term weekly. |
| Section 4.2 | Include Vegetation Monitoring requirement at location MB3. TSF bore, MB5 will be installed in September of 2023 and will be used to | As above. |

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| Condition | Summary of applicant's comment | Department's response |
|-----------|---|-----------------------|
| Table 6 | <p>monitor seepage from the Borrow Pit. MB5 (Coordinates 661,323E & 7,276,034N). A new figure has been provided showing the location of the TSF Monitor Bores.</p> <p>Rockwater prepared a report in 2022 on the TSF Cell B permeability concluding that permeability was generally low. Report has been attached.</p> <p>The Borrow Pit has been in use for a number of months and no surface seepage has been identified.</p> | |

Appendix 2: Application validation summary

| SECTION 1: APPLICATION SUMMARY | | | | |
|---|---|--|---|-------------------------------|
| Application type | | | | |
| Works approval | <input checked="" type="checkbox"/> | | | |
| Licence | <input type="checkbox"/> | Relevant works approval number: | | None <input type="checkbox"/> |
| | | Has the works approval been complied with? | Yes <input type="checkbox"/> No <input type="checkbox"/> | |
| | | Has time limited operations under the works approval demonstrated acceptable operations? | Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> | |
| | | Environmental Compliance Report / Critical Containment Infrastructure Report submitted? | Yes <input type="checkbox"/> No <input type="checkbox"/> | |
| | | Date Report received: | | |
| Renewal | <input type="checkbox"/> | Current licence number: | | |
| Amendment to works approval | <input type="checkbox"/> | Current works approval number: | | |
| Amendment to licence | <input type="checkbox"/> | Current licence number: | | |
| | | Relevant works approval number: | N/A | <input type="checkbox"/> |
| Registration | <input type="checkbox"/> | Current works approval number: | None | <input type="checkbox"/> |
| Date application received | 08/05/2023 | | | |
| Applicant and Premises details | | | | |
| Applicant name/s (full legal name/s) | Abra Mining Pty Limited | | | |
| Premises name | Abra Base Metals Project | | | |
| Premises location | Parts of mining tenements M52/776, G52/292, L52/210, and L52/194 | | | |
| Local Government Authority | Shire of Meekatharra | | | |
| Application documents | | | | |
| HPCM file reference number: | DER2023/000324 | | | |
| Key application documents (additional to application form): | Attachment 1A – Proof of Occupier Status - Tenements Attachment 1B – ASIC Company Extract 2022 Attachment 2 – Abra Base Metals Project Location Plan 01_Works Approval Application – Supporting Information 02_Works Approval Application Form 2 – Premises Map AMPL Response to DWER Letter 14 4 2023 App 1_PDK0732.ENVIROLAB_EXCEL App1_PEE0003.ENVIROLAB_EXCEL App 2_DER 2014 extract | | | |

| | | |
|--|--|---|
| | App3a – Rockwater (2018) Hydrology and Surface App3b – Rockwater (2019) Hydrology and Surface App3c – Rockwater (2022) Creek Discharge | |
| Scope of application/assessment | | |
| Summary of proposed activities or changes to existing operations. | <p>The works approval is for the construction, commissioning, and time limited operation of mine dewatering infrastructure that includes discharge pipeline and discharge point (includes velocity dissipator), water transfer route and infrastructure.</p> <p>Other infrastructure required for category 6 activities has already been constructed under works approval W6205/2018/1, which includes dewatering bore 003 (under DWER permit CAW207145(1)), Turkey's Nest 1 and Turkey's Nest 2, and unlined borrow pit in TSF cell B.</p> <p>The borrow pit that was excavated July 2021 to October 2022 to provide gravel for construction purposes and will be re-purposed as a water storage containment structure to provide additional settlement / residence time.</p> | |
| Category number/s (activities that cause the premises to become prescribed premises) | | |
| Table 1: Prescribed premises categories | | |
| Prescribed premises category and description | Assessed design capacity | Proposed changes to the production or design capacity (amendments only) |
| Category 6: Mine dewatering | 950,000 kilolitres per year (maximum discharge volumes) | New category |
| 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: N/A Managed under Part V <input checked="" type="checkbox"/> |
| Does the applicant hold any existing Part IV Ministerial Statements relevant to the application? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Ministerial statement No: N/A EPA Report No: N/A |
| Has the proposal been referred and/or assessed under the EPBC Act? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Reference No: N/A |
| 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: M52/776 expiry 21/12/2042 G52/292 expiry 9/7/2039 L52/210 expiry 24/9/2040 L52/194 expiry 27/9/2039 |
| 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? |

| | | |
|--|---|--|
| Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | CPS No: 8234/1 Existing permit, but for current prescribed premises boundary and not the proposed boundary in this application |
| 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: 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 <input checked="" type="checkbox"/> No <input type="checkbox"/> | Application reference No: N/A Licence/permit No: GWL203501 |
| 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: East Murchison Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Regional office: Mid-West Gascoyne |
| Is the Premises situated in a Public Drinking Water Source Area (PDWSA)? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/> |
| Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004</i> , <i>Environmental Protection (Controlled Waste) Regulations 2004</i> , <i>State Agreement Act xxxx</i>) | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | <i>Dangerous Goods Safety Act 204</i> <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> <i>Mining Act 1978</i> |
| Is the Premises within an Environmental Protection Policy (EPP) Area? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | |
| Is the Premises subject to any EPP requirements? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | |
| Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Classification: N/A Date of classification: N/A |