



## Application for Works Approval

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

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**Works Approval Number** W6834/2023/1

**Applicant** Vango Mining Limited

**ACN** 108 737 711

**File number** DER2023/000508

**Premises** Marymia Gold Project  
Mining Tenements M52/217 and M52/218  
MEEKATHARRA WA 6642

As defined by the premises map attached to the issued works approval

**Date of report** 23 May 2024

**Decision** Works approval granted

**MANAGER, RESOURCE INDUSTRIES  
REGULATORY SERVICES**  
an officer delegated under section 20 of  
the *Environmental Protection Act 1986* (WA)

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## 1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, works approval W6834/2023/1 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 28 July 2023, the applicant applied for a works approval under section 54 of the *Environmental Protection Act 1986* (EP Act) to support a Mining Proposal application for the development of the Trident underground mine (MP 119705 – refer to Section 2.31 for additional information).

The underground mining of the Trident deposit is part of the broader Marymia Gold Project (the Premises). The premises is approximately 170 km north-west of Wiluna. The Premises has been mined for gold since it was discovered in the Plutonic Marymia Greenstone Belt in 1986. Initially, the site was owned and operated by Resolute Resources Ltd (now Resolute Mining Limited) from 1987 to 1998 after which the Premises has been under a state of care and maintenance. All major infrastructure at the Premises has been decommissioned and removed, with only minor facilities remaining to support exploration and care and maintenance activities; including reviews of the monitoring borefield. On 02 March 2023, Catalyst Metals Limited acquired Vango Mining Limited.

The Trident Underground deposit will be accessed via a proposed decline from the Marwest pit which extends approximately 1,500 m from the Marwest pit to the Trident resource located adjacent to the existing Trident box cut and associated WRD Pit (refer to Figure 1 and 2 for an overview of the premises infrastructure).

The mine is planned to produce at a peak rate of approximately 360,000 tonnes per annum of gold ore with a life of mine (LOM) of approximately five years. Ore will be stockpiled on a ROM pad to be established close to the pit crest prior to being transported offsite for processing at the Plutonic Mine (located approx. 27 km southeast of the project site).

The Trident Underground gold deposit sits below the water table (32 mbgl) and a highly transmissive groundwater aquifer at the ground surface.

The scope of the works approval application is limited to the dewatering of Marwest Pit and Trident Underground into Mareast Pit. The premises relates to the category 6 and assessed design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6834/2023/1. 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 W6834/2023/1.

### 2.2.1 Dewatering activities at Marwest Pit and associated infrastructure

As part of ongoing mining activities, the premises is expected to experience groundwater infiltration, therefore the applicant proposes to dewater Marwest Pit and Trident Underground to facilitate mining activities:

- Marwest Pit: dewatering activities at Marwest Pit will occur on an ad-hoc basis to assist with safe access to the underground portal for the Trident Deposit as required. A permanent submersible pump will be sited on the pit access ramp to keep water down to between 2.5 and 5 vertical metres. Any deeper will risk slurry water clogging the pump. Collected water will be transferred (pumped) via a dewatering pipeline along the proposed pipeline route (refer to Figure 2).
- Trident underground: dewatering activities will ensure safe access to the mining void. Dewatering activities will occur both underground and at the surface:
  - Dewatering from the surface will consist of the use of four abstraction bores, two existing (TPB1 (520 kL/d) and TPB2 (865 kL/d)) and two proposed (TPB01 (520 kL/d) and TPB03 (520 kL/d)) and pumped via a dewatering pipeline along the proposed pipeline route (refer to Figure 2). Dewatering from the surface is expected to occur first to allow access to the decline and underground deposit.
  - Underground dewatering will occur via the use of a series of underground sumps. The inflow of groundwater into the Trident Deposit will be captured by sumps and transferred (pumped) via a dewatering pipeline along the proposed pipeline route (refer to Figure 2). Water will be directed to the underground sumps by mobile machinery face pumps, or via gravity flow from upper levels of the underground. A maximum dewatering flow rate of 2 to 7 litres per second (L/s) is expected to dewater the Trident underground. Underground dewatering infrastructure will be added as required as mining progresses over the five-year LOM.

The receiving Mareast Pit is located about 1.6 km east of the Marwest Pit and, therefore, is close enough for water to be transported via pipeline. The dewatering pipeline will be constructed using 200 mm poly pipe. Connections will be poly-welded and will include steel flange fittings and gate valves for isolation. The pipeline alignment will use existing roads and tracks between Marwest and Mareast pits, and therefore no clearing of vegetation will be required. The pipeline will not encompass earthen bunds due to the predominately fresh quality of water (Table 1). The topsoils are stony and non-dispersive due to the low sodium content, therefore, erosion from pipeline spills is expected to be minimal. The applicant has indicated that the pipeline will be visually inspected during each shift/daily for the duration of pumping.

At Mareast Pit, the dewatering pipeline is proposed to be run down the Mareast pit ramp to the lake surface, where it will be supported by a floating barge. Collected water from dewatering activities may be diverted to a proposed turkeys nest for storage and subsequently used for dust suppression activities. The turkeys nest will have an automated diversion T-piece on the main manifold to Mareast, enabling ad-hoc filling of the dam for water cart and site dust suppression requirements. The Turkeys nest will be lined and hold up to 3000 m<sup>3</sup> of water with a 300 mm freeboard.

The construction and operation of the two proposed abstraction bores (TPB01 and TPB03) are subject to assessment/approval under the *Rights in Water and Irrigation Act 1914* (RIWI Act) (refer to section 2.3.2) Access to the dewatering bores is to be via a 700 m long access track 5 m wide.

### 2.2.2 Storage capacity of Mareast Pit

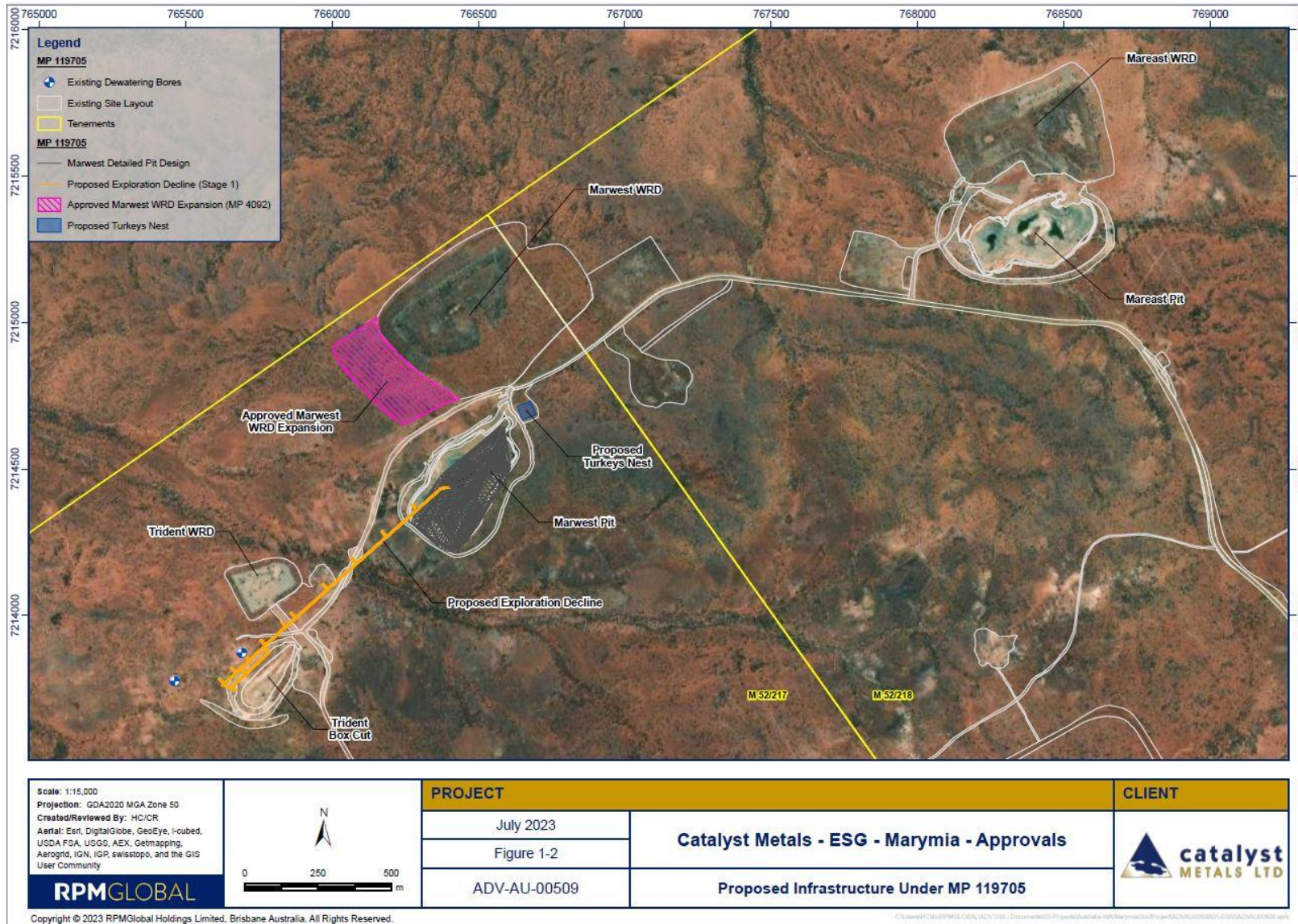
Mareast Pit is reported to have a storage capacity of 1,258,382 m<sup>3</sup> while also maintaining a 5 m freeboard. The expected amount of water from the Trident underground to be stored in the Mareast Pit is 236.5 ML per annum with a maximum of 1182.6 ML for the LOM, comprising 94% of the Mareast Pit capacity. This volume is inclusive of ad-hoc dewatering activities within the base of the Marwest open pit. Evaporation rates and water usage for dust suppression or reuse in mining activities have not been factored into the above modelling/calculation estimates therefore there is some redundancy in the pit capacity. A water balance of all predicted inputs and outputs are shown in Figure 3 below.

### 2.2.3 Groundwater monitoring network at Mareast Pit

The applicant proposes to re-instate the existing monitoring locations (geotechnical/ water test holes) around the perimeter of Mareast to monitor the response of the groundwater to discharge activities. Should some of these holes be in-operable, the applicant would construct a new network of monitoring holes. The department has imposed monitoring bore construction and reporting conditions on the Works Approval to support this.

### 2.2.4 Groundwater monitoring network at Marwest Pit

The Marwest pit has historically contained a limited pit lake volume which has remained fairly static since mining ceased in 1997. The applicant is committed to ensuring any surface flows are managed and pumped from the pit to control water close to the portal access. As this pit will not receive dewatering discharge, and due to the history of it being relatively dry, and plans for it to remain dry (dewatering as required), the applicant has not proposed to install or re-commission any groundwater monitoring bores around the pit perimeter.



**Figure 1: Proposed Exploration Decline**

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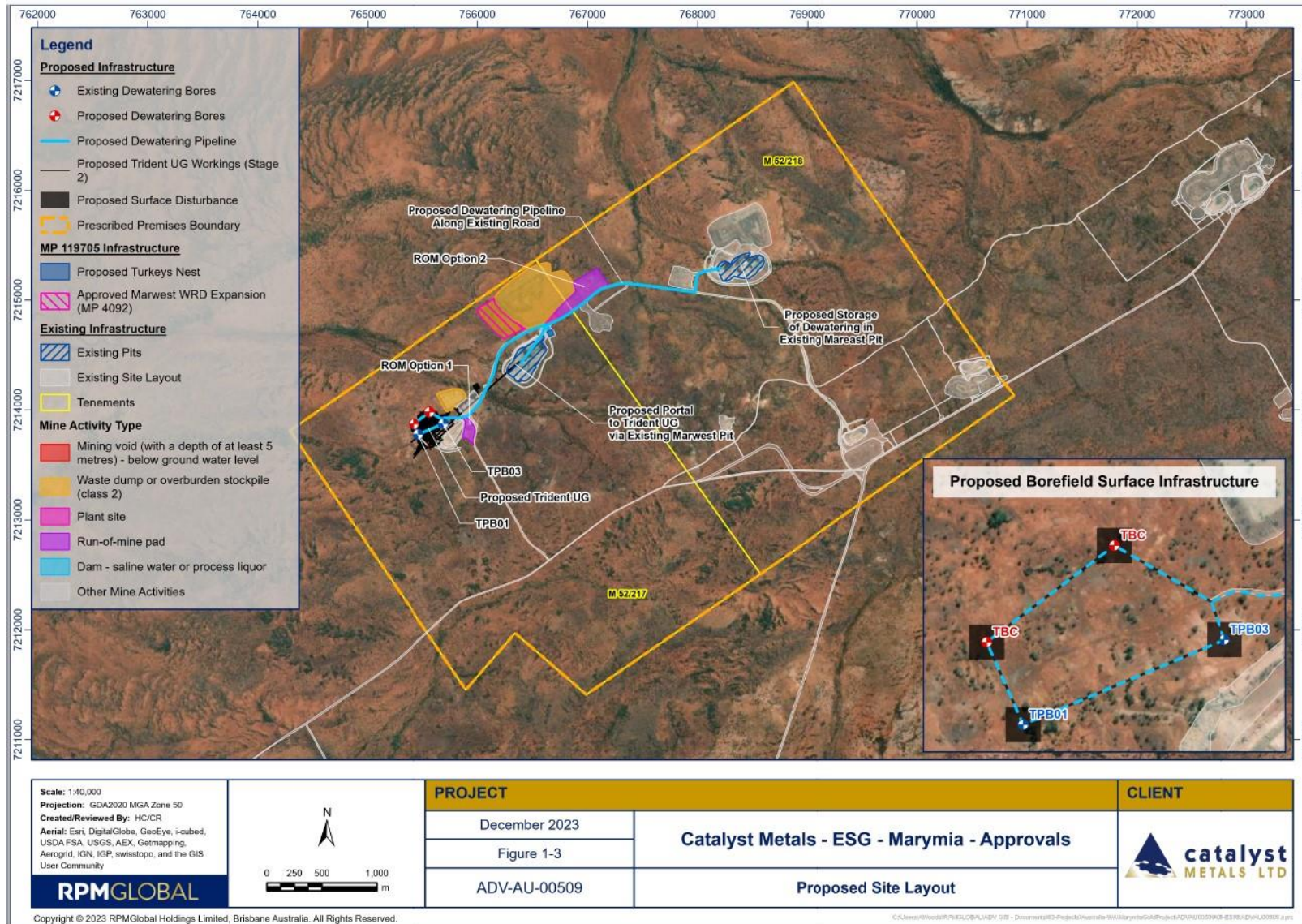


Figure 2: Proposed Trident underground borefield, dewatering pipeline, ROM Pad and stockpile areas

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Water Balance equation		L/sec	Commentary
<b>Trident UG Water Balance - discharge into Mareast Open Pit (initial 3 year LOM)</b>			
<b>Inputs</b>			
Marwest			
Precipitation direct into pit		2.0	Seasonal
Precipitation indirect into pit - surface run off		-	Rockwater April 2019 - TR_A catchment does not report to Pit. Existing Abandonment also supports this assumption.
Water inflow into pit from groundwater		0.5	Partly Seasonal - photo's over a year period have confirm no static changes to SWL in pit
		2.5	Marwest - Pumped via a in pit system
Trident Underground			
Water inflow into underground from ungrouted surface drillholes		-	Accounted for from dewatering borefield at Trident
Water inflow into underground from groundwater (assuming Borefield operating)		3.5	Variable pending mine depth and seasonal recharge. Value based on Rockwater - Nov 2013 DEWATERING ASSESSMENT Report
		3.5	Trident Underground - Pumped by a travelling mono
Borefield - Additional to UG dewatering			
TPB01 - Groundwater pumped		11.0	Rockwater - Nov 2013 DEWATERING ASSESSMENT Report
TPB02 - Groundwater pumped			
TPB03 - Groundwater pumped			
TPB04 - Groundwater pumped			
		11.0	TRI_TPB - pumped by 4x5kW bore pumps
<b>Outputs</b>			
Evaporation - Marwest		1.22	Average annual evaporation rate of approximately 3200 mm (3.2m)
Material moisture content - assuming 9%		0.26	
Underground Workings - Ground infiltration		1.5	Estimated
Water Cart - near mine and haulage route		6.94	
		9.9	
Pumpline to Mareast			
	UG	1.71	
	Marwest	1.28	
	Borefield	4.05	
		7.0	
<b>Storage</b>			
Opening Capacity - MarEast Pit (with 5m V freeboard)		1,258,382	m <sup>3</sup>
Stage Dewatering per day		609	m <sup>3</sup>
Days in Stage		1095	Initial 3 year LOM plan. LOM and water balance will be re-assessed once mine is in production (year 1).
Stage Evap multiplier		300%	
Infiltration into groundwater table - once SWL in pit is above surrounding water table		2	L/sec - infiltration into groundwater once the in pit lake is equi. or above regional SWL.
Evaporation annually - Mareast		51,200	m <sup>3</sup>
Input to Pump System		666,610	
Evap during period		153,600	
Infiltration during period		189,216	
Capacity Available		1,601,198	Mareast
Capacity used		666,610	
Capacity remaining		934,588	
Overflow to subsequent storage (input)		-	m <sup>3</sup>
Annual Discharge Estimate (DWER Cat 6 Lic)		222,203	m <sup>3</sup>

Figure 3: Mareast Pit Water Balance

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## 2.2.5 Dewatering discharge and receiving groundwater qualities

### Trident Underground

Water samples were collected from Trident production bores TPB01 and TPB03 in March 2019 and in April 2024. Monitoring results indicate that characteristics are consistent and confirmed that water quality is relatively fresh, near neutral to slightly alkaline and hard water dominated by calcium and bicarbonate ions (Table 1).

Arsenic and nitrate occur at naturally elevated levels not suitable for potable use, however, is within tolerance levels for livestock (Table 1). Elevated arsenic is reported to be characteristic of the localised rock and minerals associated with the Plutonic gold deposits, while the nitrate levels are reported to be reflective of the Gascoyne region.

In the event of a pipeline spill, these levels will not be toxic to plants (Sharma *et. Al.*, 2021). The threshold concentration of arsenic in soils for most plants is 10 mg/kg (where one litre of water is equivalent to one kilogram) (Sharma *et. Al.*, 2021). Currently, undisturbed soils around the Trident area already contain about 6.4 mg/kg of arsenic (MBS, 2019). Furthermore, nitrate concentrations above 50 mg/kg (equivalent to 50 mg/L) is considered high for grain crops in sandy soils (Carson & Phillips, 2014). Given these elements are reported to be of natural levels and the water is relatively fresh, the applicant has proposed not to construct bunding along the dewatering pipeline.

### Marwest Pit

Water samples were collected from the surface of Marwest Pit and Mareast Pit in July 2023. The water is brackish with a concentration of dissolved magnesium exceeding livestock drinking water guidelines (Table 1) (Waters and Rivers Commission, 2000). The high salt content is suggested by the applicant to be due to high evaporation in the pit and will be diluted by the fresher waters of the Trident Underground when mixed in the Mareast pit.

The water is also alkaline and contains low concentrations of dissolved metals and nutrients such as nitrate (Table 1). The potassium (160 mg/L) and magnesium (189 mg/L) levels shown in Table 1 are also considered to be below toxic levels to plants (DPRI, 2024; Giri *et. Al.*, 2023).

### Mareast Pit

The pit water, which sits above the historical aquifer at 35 to 40 mbgl, shows brackish, alkaline water with no elevated metals within livestock drinking guidelines. Refer to Table 1 for a summary of related water analytical results for Mareast Pit and nearby monitoring bore (ME016).

### Receiving Groundwater at Mareast Pit

Historical exploration drilling data from 1995 at bore ME016 found a limited supply (40 to 50 kL/d) of fresh water (680 mg/L) available from an aquifer between 82 and 92 mbgl (Table 1). As outlined in Section 2.2.3, groundwater monitoring bores are yet to be reinstated and recent samples from the aquifer at Mareast Pit have not been obtained. The groundwater at Trident, Mareast and Mareast, are assumed by the applicant to be part of the same aquifer based on the similarities in historical and present water chemistry and the same geological makeup (granite/ultramafic contact as the dominant structural control).

Sampling and analysis of groundwater carried-out as part of the works approval will assist in closing some data gaps for groundwater quality surrounding the Mareast Pit.

Table 1: Water quality<sup>1</sup>

Contaminant	Limit of Reporting (LOR)	TPB01 (2024)	TPB02 (2024)	TPB03 (2024)	Marwest Pit (2023)	Mareast Pit (2023) [*2024 – field results]	ME016 Mareast bore (1995) <sup>4</sup>	Livestock drinking water guidelines <sup>2</sup>
pH	0.01	8.3	8.8	8.2	7.97	8.72 [9.48]	7.5	N/A
EC (mS/m)	1	350	650	1000	<b>6,240</b>	2,100	1,400 (field)	Refer to TDS
<b>Unit</b>		<b>mg/L</b>						
Total Hardness as CaCO <sub>3</sub>	1	97	150	360	3,980	481	N/A	N/A
Total Alkalinity as CaCO <sub>3</sub>	1	120	180	240	94	139	N/A	N/A
Sulphate as SO <sub>4</sub> <sup>2-</sup>	1	31	<1.0	74	<b>3,600</b>	220	68	<500
TDS	10	200	330	700	<b>6,670</b>	1,270 [1944]	680	5,000 <sup>3</sup>
Al	0.01	<10	<10	21	<0.001	<0.01	N/A	5.1-5.6
As	0.0014	<b>1.8</b>	<1.0	<b>11</b>	<0.001	<0.001	0.004	<0.025
Ca	1	11	4.6	33	226	49	41	<1,000
Cd	0.0001	<0.10	<0.10	<0.10	<0.0001	<0.0001	<0.0001	<0.01
Cl	1	33	120	240	237	452	115	N/A
Cr III	0.001	<1.0	<1.0	<b>1.7</b>	<0.001	<0.001	N/A	<0.05
Fe	0.05	12	24	<10	<0.05	<0.05	<0.05	N/A
Hg	0.0001	<0.050	<0.050	<0.050	<0.0001	<0.0001	<0.0001	<0.002
K	1	5.8	11	6.7	160	20	10.6	N/A
Mg	1	17	34	67	<b>829</b>	87	42	<500
Mn	0.001	<b>88</b>	<b>100</b>	3.6	0.152	<0.001	<0.001	<10
Na	1	35	71	66	158	235	116	N/A
Pb	0.001	<1.0	<1.0	<1.0	<0.001	<0.001	N/A	<0.1
Sb	0.001	<1.0	<1.0	<1.0	<0.001	<0.001	<0.001	N/A
Se	0.001	<1.0	<1.0	<b>2.8</b>	<b>0.05</b>	<0.01	<0.01	<0.02
Zn	0.005	1.4	<1.0	11	<0.005	<0.005	<0.005	<20
Nitrite as N	0.01	<0.0050	<0.0050	1.5	0.03	0.03	N/A	<10
Nitrate as N	0.01	0.013	0.0074	15	3.04	2.81	N/A	<100

Note 1: Source: 23. RPM Global 2023 (see reference list)

Note 2: Livestock drinking water quality guidelines (ANZG 2023)

Note 3: Livestock (beef cattle) may be reluctant to drink water at levels exceeding 5,000 mg/L. Loss of production and decline in livestock condition also noted for water quality exceeding these levels.

Note 4: Source: RUST PPK Pty Ltd, 1995

Note 5: Bold text = exceedances of livestock guidelines.

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### 2.2.6 Hydrogeology at Mareast Pit

The Mareast pit will be receiving dewater from Trident underground and Marwest Pit. The applicant considers the Marwest Pit suitable for dewatering given that it is “located within an ultramafic orebody which has low permeability and relatively poor hydraulic connection to the highly transmissive contact zone” and “geologically isolated” (Woodward-Clyde, 1997).

## 2.3 Other Approvals

### 2.3.1 Mining Act 1978

A Mining Proposal (MP) was approved under Registration ID 119705 on 06 September 2023, authorising the construction of an exploration decline consisting of a portal from the Marwest Pit towards the underground gold deposit adjacent to the Trident Waste Rock Dump (WRD) and boxcut (DMIRS, 2023b). This exploration decline is proposed to provide access to underground drilling sites for resource evaluation drilling; and be approximately 1,500 m in length with a profile of 5.0 m width x 5.5 m height (DMIRS, 2023b). The material generated from the exploration activity is proposed to be stockpiled on the already approved Marwest WRD (DMIRS, 2023b).

A MP is under assessment via Registration ID 120660 for the development of the Trident Underground Project on M52/217 and M52/218 for development of the underground mine and dewatering of the underground from a borefield utilising two existing and two new bores, among other activities.

### 2.3.2 Groundwater licence

On the 8 March 2024, the department granted a 5C groundwater licence (GWL209789(1)) under the RIWI Act for up to 300,000 kL per year. This licence allows the taking of groundwater for mine dewatering, dust suppression, mineral exploration and road maintenance purposes.

### 2.3.3 Native Vegetation Clearing Permit

Any clearing of native vegetation must be conducted under a native vegetation clearing permit or a valid exemption. The applicant has stated that a clearing exemption applies. The Applicant must ensure they have all relevant approvals for the Premises.

## 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 and operation which have been considered in this decision report are detailed in Table 2 below. Table 2 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

**Table 2: Proposed applicant controls**

Emission	Sources	Potential pathways	Proposed controls
<b>Construction<sup>1</sup></b>			
Dust	Construction of: <ul style="list-style-type: none"> <li>the dewatering pipeline</li> <li>turkeys nest</li> </ul>	Air/windborne	A water truck will be available on site to ensure effective dust management.  Vehicles will travel at low speeds within the tenement areas to reduce dust.
<b>Time Limited Operations</b>			
Combined fresh and brackish mine dewatering water with elevated arsenic and magnesium	Rupture from the dewatering pipeline	Overland runoff reducing surface water quality for livestock and.	The dewatering pipeline connections are to be poly-welded, have steel flange fittings and gate valves for isolation.  Visual inspections during each shift and during pumping ensure water flow daily for the duration of pumping.  Leak detection.  Pipeline to be constructed above ground to facilitate inspections.
	Overfilling Mareast Pit		Daily inspections of water storage facility.  Approximately 236.524 ML or one fifth of the Mareast Pit capacity is expected to be stored per annum.
	Mareast Pit and embankments	Infiltration to groundwater causing mounding and water quality issues	Groundwater monitoring bores will be installed/re-instated around the Mareast Pit to monitor the groundwater response to discharge activities.

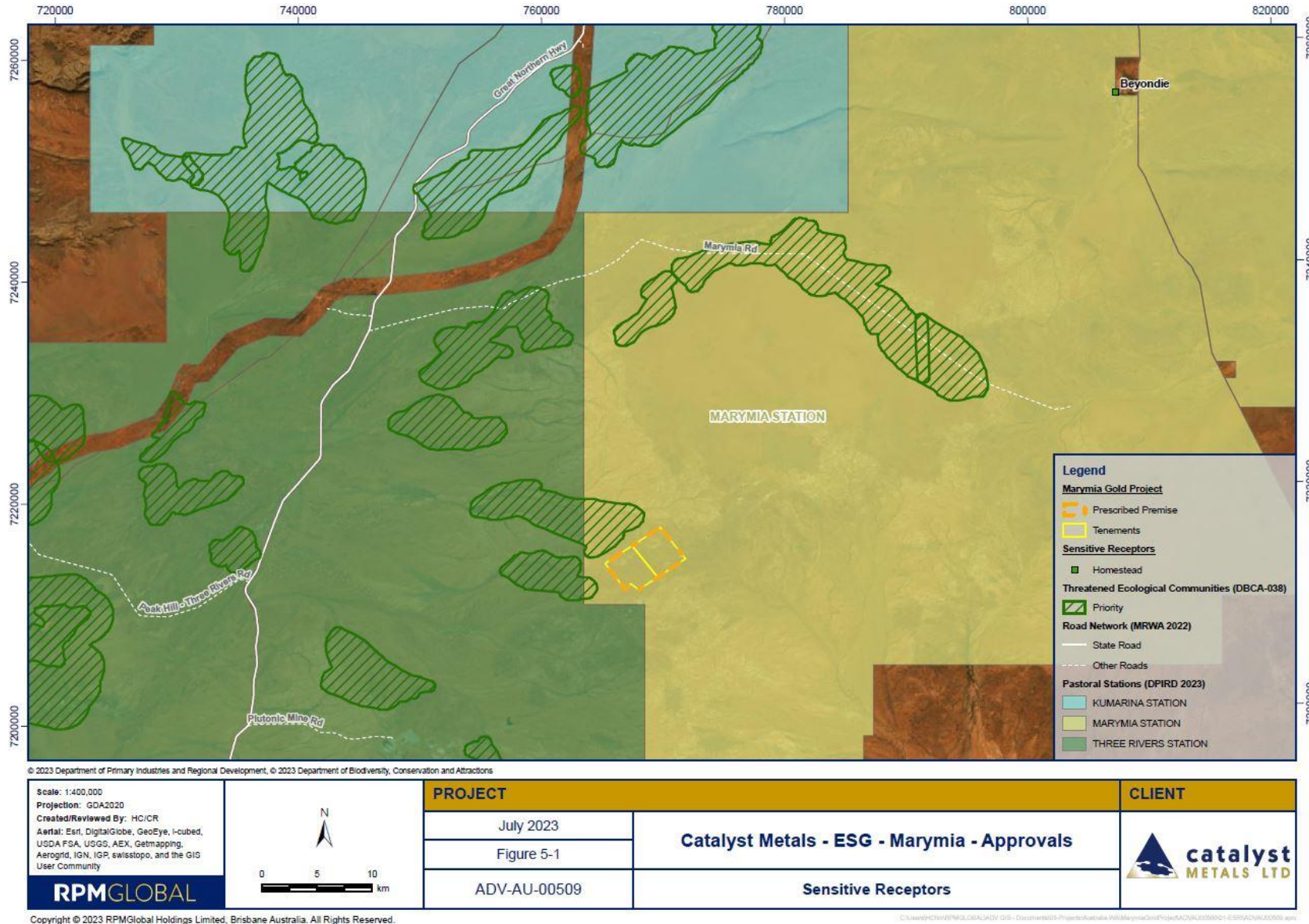
### 3.1.2 Receptors

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. Table 3 below provides a summary of potential human and environmental receptors that may be impacted because of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental Siting* (DWER 2020)).

**Table 3: Sensitive human and environmental receptors and distance from prescribed activity**

Human receptors	Distance from prescribed activity
Marymia Station	Overlaps premises boundary. The station is stocked and there is an agreement between the applicant and the Pastoralist to keep livestock out of the Prescribed Premises (RPM Global, 2023). No homestead within 2 km of the Premises. Refer to Figure 3.
Kumarina Station	Kumarina Station is located further than 10 km from the Project area and therefore are not considered in this assessment. <b>Ruled out due to distance of the homestead.</b>
Beyondie Homestead	Beyondie Homestead is located further than 10 km from the Project area and therefore are not considered in this assessment. <b>Ruled out due to distance of the homestead.</b>
Environmental receptors	Distance from prescribed activity
TEC	<p>The Frederick Land System (Priority 3) is approximately 1.3 km north west of the Mareast Pit and is not considered to be groundwater dependant (Curry et al., 1994). The characterisation of the system is as follows:</p> <p>“Hardpan wash plains characterised by broad, reticulate mulga groves and wanderrie banks supporting tall acacia shrublands with grassy understorey; in survey area it occurs, only along the boundary of Gascoyne-Murchison River catchment divide (Curry et al., 1994).</p> <p>Geology: Quaternary alluvium with aeolian deposit (Curry et al., 1994).</p> <p>Geomorphology: Depositional surfaces; alluvial plains carrying sheet flow; intercepted by arcuate mulga grove" slightly elevated above broad intergrove hardpan plains and up to 500 m long and 100 m wide, above central unchannelled drainage tracts receiving slightly more concentrated flow; minor linear wanderrie banks, relief usually &lt; 5 m (Curry et al., 1994).</p> <p>Range condition summary: Insufficiently sampled; vegetation probably mostly in fair condition; little or no erosion (Curry et al., 1994).”</p> <p>The vegetation sits at a lower elevation than the dewatering infrastructure and is potentially susceptible to major pipeline spills or overflows from Mareast Pit.</p>
Aboriginal Heritage	<p>Multiple registered sites containing artifacts/scatter and quarries are present within the Premises Boundary and adjacent to the pipeline corridor (AHIS, 2023; RPM Global, 2023).</p> <p>On 27 April 1995, a section 18 application was approved for the Marwest Prospect, Marymia, noting certain areas are not to be disturbed during mining activity (RRL, 1995). The applicant has stated numerous heritage surveys have been conducted since 1991 outlining areas that need to be avoided for operations (RPM Global, 2023).</p> <p>The department notes that ID: 779 sits in a lower elevation within a minor creek line from the dewatering pipeline and may be at risk to flooding from pipeline failure (Figure 5). The remaining heritage sites are elevated in relation to the pipeline (Figure 5).</p>

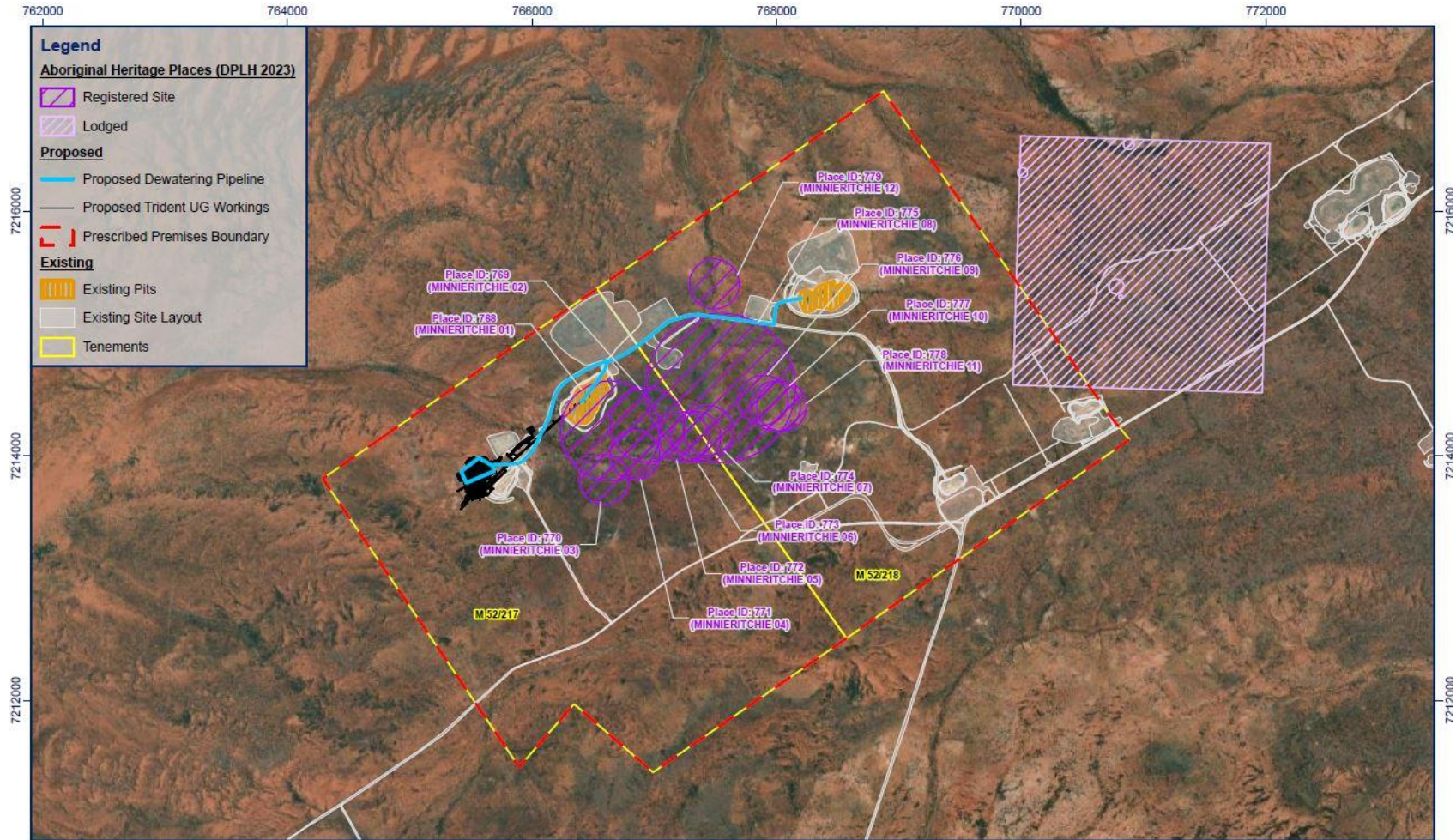
Priority Flora	<p>Nine priority listed flora have been identified within the Premises boundary (Onshore, 2019). Of those, two species <i>Eremophila lanata</i> (P3) and <i>Thryptomene sp. Leinster</i> (P3) have been surveyed within 30 m of the pipeline route (Figure 6).</p>
Native Vegetation	<p>Premises area vegetation (Figure 6) communities are subdivided into two broad complexes:</p> <ul style="list-style-type: none"> <li>• Mulga shrubland and low woodland – dominated by Acacia (<i>A. aneura</i>) in association with low lying plains, hills and valleys.</li> <li>• Shrub steppe communities on sandplain – these include Acacia, Eremophila and Cassia chenopodiaceous shrubs and mallee eucalypts over <i>Triodia spinifex</i> grasslands.</li> </ul>
Fauna	<p>Bat monitoring was undertaken at the K2 area, encompassing the K2 Pit and exploration camp near the Apollo / Barrick pit. An Anabat Swift (Titley) was used to record the calls of several species including:</p> <ul style="list-style-type: none"> <li>• Finlayson's Cave Bat (<i>Vespadelus finlaysoni</i>);</li> <li>• Sheathtail Bat (<i>Taphozous georgianus</i>);</li> <li>• Yellow-bellied Sheathtail Bat (<i>Saccolaimus flaviventris</i>); and</li> <li>• Inland Broad-nosed Bat (<i>Scotorepens balstoni</i>).</li> </ul> <p>The large number of calls recorded suggests that these species were roosting in both the K2 portal and the area surrounding the exploration camp. The K2 portal is approximately 11.2 km from the Trident area.</p> <p>No conservation significant species were recorded. Furthermore, the Ghost Bat and Pilbara Leaf-nosed Bat are considered extinct in the Marymia region.</p> <p><b>Ruled out due to distance.</b></p> <p>Long-tailed Dunnart <i>Sminthopsis longicaudata</i> is a priority 4 conservation fauna species and is expected to be present outside of the project area.</p> <p><b>Ruled out due to abundance.</b></p>
Surface water	<p>The Premises is in an elevated area on a drainage divide that separates the headwaters of the westwards-flowing Gascoyne River system from those flowing south in the Lake Gregory inland drainage system. The relatively minor creeks and drainage lines that are present are ephemeral and only flow for short periods following significant rainfall (MBS Environmental, 2019). Some of these minor creek lines intersect the pipeline route and Mareast Pit (RPM Global, 2023).</p>
Groundwater	<p>Groundwater at Trident Pit is 32 mbgl and observed to slope down to the southwest. Groundwater at Mareast Pit was historically observed between 82 and 92 mbgl. Generally, the quality from both sites is fresh, near neutral to alkaline and have low nutrients. Trident groundwater has some elevated arsenic, chromium, manganese and selenium above the recommended livestock drinking guidelines, not observed in the historical levels.</p>



**Figure 4: The Premises in relation to Marymia Station and Threatened Ecological Communities (TEC)**

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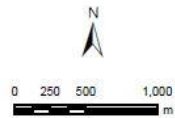




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Scale: 1:40,000  
 Projection: GDA2020 MGA Zone 50  
 Created/Reviewed By: HC/CR  
 Aerial: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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**PROJECT**

July 2023

Figure 2-3

ADV-AU-00509

**Catalyst Metals - ESG - Marymia - Approvals**

**Aboriginal Heritage**

**CLIENT**

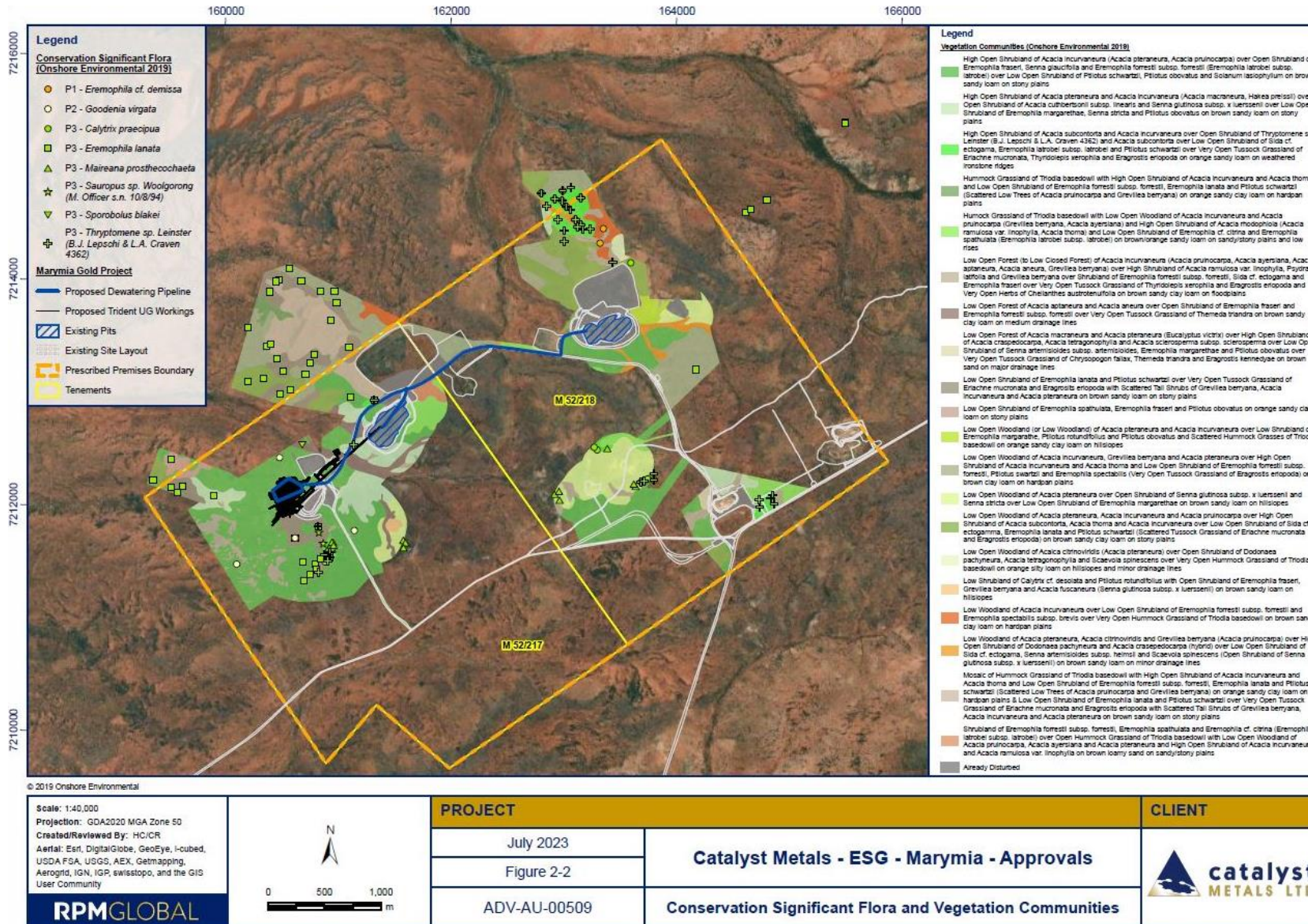


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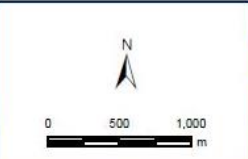
**Figure 5: Aboriginal Heritage**

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Scale: 1:40,000  
 Projection: GDA2020 MGA Zone 50  
 Created/Reviewed By: HC/CR  
 Aerial: Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community  
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PROJECT	
July 2023	Catalyst Metals - ESG - Marmymia - Approvals
Figure 2-2	
ADV-AU-00509	

CLIENT	
<b>Catalyst Metals - ESG - Marmymia - Approvals</b>	
<b>Conservation Significant Flora and Vegetation Communities</b>	



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Figure 6: Conservation significant flora and vegetation communities

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

## 3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and considers potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the 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 4.

Works approval W6834/2023/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 4 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., 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 4: Risk assessment of potential emissions and discharges from the premises during construction and operation**

Risk events					Risk rating <sup>1</sup> C = consequence L = likelihood	Applicant controls sufficient?	Conditions <sup>2</sup> of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
<b>Construction</b>								
Construction of the dewatering pipeline	Dust	Air/windborne pathway causing impacts to health and amenity	Priority Flora	Refer to Section 3.1	C = Slight L = Rare <b>Low Risk</b>	Y	N/A	N/A
<b>Commissioning</b>								
Pipeline leak during wet commissioning of the transfer pipeline	Combined fresh and brackish dewater with elevated arsenic and magnesium	Overland runoff reducing surface water quality for livestock.	Aboriginal Heritage Marymia Station livestock TEC Priority Flora Native Vegetation Surface water	Refer to Section 3.1	C = Minor L = Rare <b>Low Risk</b>	Y	Condition 1, Table 1 Design and construction and installation requirements Requires wet testing for integrity of infrastructure	N/A
<b>Time Limited Operations</b>								
Rupture from the dewatering pipeline	Combined fresh and brackish dewater with elevated arsenic and magnesium	Overland runoff reducing surface water quality for livestock.	Aboriginal Heritage Marymia Station livestock TEC Priority Flora Native Vegetation	Refer to Section 3.1	C = Minor L = Rare <b>Low Risk</b>	Y	Condition 1, Table 1 Design and construction and installation requirements Requires construction design, telemetry etc.  Condition 6, Table 2 Infrastructure and equipment requirements during time limited operations Requires inspections and actions taken if leak detected	Discharges monitoring during time limited operations, required to monitor inputs and quality for discharge to the Mareast Pit.

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Risk events					Risk rating <sup>1</sup> C = consequence L = likelihood	Applicant controls sufficient?	Conditions <sup>2</sup> of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
			Surface water				Condition 11, Table 5 Emissions and discharges monitoring during time limited operations. Requires flow and quality monitoring of mine dewatering water	
Overtopping of Mareast Pit			Aboriginal Heritage TEC Priority Flora Native Vegetation Surface water	Refer to Section 3.1	C = Moderate L = Rare <b>Medium Risk</b>	Y	Condition 1, Table 1 Design and construction and installation requirements Requires storage capacity and freeboard design on Mareast Pit Condition 6, Table 2 Infrastructure and equipment requirements during time limited operations Requires inspections and that freeboard be maintained on Mareast Pit Condition 8, Table 4 Emission and discharge limits during time limited operations Condition 11, Table 5 Emissions and discharges monitoring during time limited operations. Requires flow and quality monitoring of mine dewatering water	N/A
Mareast Pit mine dewatering discharge infiltrating the groundwater		Groundwater mounding reducing water quality at the root zone of vegetation and surface water quality	Native vegetation Surface water	Refer to Section 3.1	C = Minor L = Possible <b>Medium Risk</b>	N	Condition 1, Table 1 Design and construction and installation requirements Requires storage capacity and freeboard design on Mareast Pit Condition 12, Table 6 Monitoring of groundwater Requires groundwater	Condition 12 requires baseline groundwater monitoring of surface water levels (SWL) and quality required for comparison with ongoing groundwater monitoring following mine dewatering discharge to Mareast Pit. Conditions 13 and 14 includes

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Risk events					Risk rating <sup>1</sup> C = consequence L = likelihood	Applicant controls sufficient?	Conditions <sup>2</sup> of works approval	Justification for additional regulatory controls
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
							monitoring in the vicinity of Mareast Pit	groundwater monitoring bore construction requirements added to support new bore construction (where required)
		Seepage causing reduced groundwater quality	Groundwater	Refer to Section 3.1	C = Minor L = Possible <b>Medium Risk</b>	N	Condition 8, Table 4 Emission and discharge limits during time limited operations Condition 11, Table 5 Emissions and discharges monitoring during time limited operations. Requires flow and quality monitoring of mine dewatering water	

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.

## 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 12 September 2023	None received.	N/A
Wharton Capital Limited advised of proposal on 12 September 2023	None received.	N/A
Shire of Meekatharra advised of proposal on 12 September 2023	The Shire replied on 16 October 2023 stating that the request was considered at the Shire of Meekatharra's ordinary Council meeting on 01 of October 2023 whereby Council resolved the following: That Council approve the request from the Department of Water and Environmental Regulation on behalf of Vango Mining Ltd situated at Marymia Gold Project on Mining Tenements M52/217 and M52/218.	Noted.
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 12 September 2023	Registration ID 120660 approved.  Registration ID 119705 – DEMIRS replied on 09 October 2023 stating that the proposed works appear to align with Mining Proposal Reg ID 120660 currently under assessment. The MP proposes to largely use existing infrastructure to develop an underground mine. DEMIRS replied on 08/03/2024 that no geotechnical issues flagged. DEMIRS replied on 13/03/2024 to clarify the two separate Registrations.  Proponents are not required to report on the progress of clearing exemptions under the EP Act, and therefore DMIRS is unable to advise the status of clearing under the 10ha exemption rule.	Noted.
Marputu Aboriginal Corporation RNTBC advised of proposal on 12 September 2023	Marputu Aboriginal Corporation RNTBC advised on 02 October 2023 that Marputu AC has not been consulted by Vango Mining or any other entity in relation to this Application. Any consideration of the Application by the Department of Water and Environmental Regulation should not proceed until Vango Mining has engaged with and consulted Marputu AC to ensure that any concerns raised by Marputu AC, particularly in relation to cultural heritage and environmental issues, are addressed.	The department notes that the applicant were invited to attend a meeting with the Marputu in Newman on 22 March 2024, where activities were advised and continued engagement and consultation are planned.

Consultation method	Comments received	Department response
<p>Marputu Aboriginal Corporation RNTBC advised of proposal on 12 September 2023</p>	<p>Marputu Aboriginal Corporation (AC) RNTBC advised with a second letter on 10 May 2024 advising the following:</p> <p>Marputu AC were not able to provide comment within the 28 day timeframe due to a series of postponed meetings due to sorry business and law business. It is appreciated if this letter is taken to be Marputu AC's response to the DWER Letter and an update on any progress in relation to the Application be provided to Marputu AC.</p> <p>Marputu AC raises various concerns in relation to the Application with key concern being the direct and indirect interference caused by any grant of the Application to sites of cultural significance to the Gingirana native title holders which are located within or in close proximity to the Tenements. Marputu AC also raises particular concerns in relation to water protection and the impact that the grant of the Application would have on preserving water for the future generations of Gingirana native title holders.</p> <p>Marputu AC considers direct consultation from Vango is required in relation to the Application and the Application should not be granted until this consultation has occurred.</p>	<p>Works Approval W6834/2023/1 has implemented controls to reduce impacts of emissions upon the surrounding environment including nearby identified Aboriginal Heritage sites.</p>
<p>Applicant was provided with draft documents on 14/03/2024 and 17/05/2024</p>	<p>Refer to Appendix 1</p>	<p>Refer to Appendix 1</p>

## 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. Aboriginal Heritage Inquiry System (AHIS) 2023, *List of Registered Aboriginal Sites*, Department of Planning, Lands and Heritage, Government of Western Australia, Western Australia.
2. ANZG (2023). *Livestock drinking water guidelines. Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra.
3. Carson, J., & Phillips, L. 2014, *Soil Nitrogen Supply, Soil Nitrogen Supply | Fact Sheets*, State Government of Victoria, Victoria, February 2014. <https://www.soilquality.org.au/factsheets/soil-nitrogen-supply>
4. Curry, P. J., Payne, A. L., Leighton, K. A., Hennig, P., Blood, D. A. 2015, *An inventory and condition survey of the Murchison River catchment Part 2.2.1, Western Australia*, June 5, 2015, Digital Library, [https://library.dpird.wa.gov.au/tech\\_bull/4/](https://library.dpird.wa.gov.au/tech_bull/4/)
5. Davies, E. 2021, *Vango mining reveals more high-grade gold extensions at Trident Deposit*, Proactive investors UK, 18 February 2021. <https://www.proactiveinvestors.com.au/companies/news/941755/vango-mining-reveals-more-high-grade-gold-extensions-at-trident-deposit-941755.html>
6. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
7. Department of Mines and Industry Regulation and Safety (DMIRS) 2023a, *Tenement Search*. <https://minedex.dmirs.wa.gov.au/Web/tenements/details/M%20%205200217> & <https://minedex.dmirs.wa.gov.au/Web/tenements/details/m%20%205200218>
8. DMIRS 2023b, MINING PROPOSAL FOR SMALL MINING OPERATIONS (MP 119705), 06 September 2023, Perth, Western Australia.
9. Department of Primary and Regional Industries (DPRi) 2024, *Claying to Ameliorate Soil Water Repellence*, Agriculture and Food. Accessed January 3, 2024. <https://www.agric.wa.gov.au/water-repellence/claying-ameliorate-soil-water-repellence>.
10. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
11. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
12. Environmental Protection Authority (EPA) 2023, *Ministerial Statements*, Government of Western Australia, Western Australia. <https://www.epa.wa.gov.au/all-ministerial-statements>
13. Fallon, M., Porwal, A., & Guj, P. 2010, *Prospectivity analysis of the Plutonic Marymia Greenstone Belt, Western Australia*, Ore Geology Reviews, 38(3), 208–218. <https://doi.org/10.1016/j.oregeorev.2010.03.009>
14. Giri, Arup, Vijay K. Bharti, Purabi Garai, and K. P. Singh 2023, *Ecotoxicology of Magnesium-Based Explosive: Impact on Animal and Human Food Chain - Discover Sustainability*, SpringerLink, December 11, 2023. <https://link.springer.com/article/10.1007/s43621-023-00173-3>
15. Mackie Martin & Associates Pty. Ltd. 1992, *Resolute Resources Ltd Marymia Gold Project Borefield Monitoring Review*, December 1992.
16. MBS Environmental (MBS) 2018, *Baseline Soil And Landform Assessment Sampling Plan Marymia Plutonic Dome Gold Project*, November 2018.
17. MBS Environmental (MBS) 2019, *Marymia Plutonic Dome Gold Project Baseline Soil And Landform Assessment*, May 2019.

18. Onshore Environmental 2019, *Marymia Gold Project Detailed Flora and Vegetation Survey*, Prepared for Vango Mining, July 2019, Yallingup, Western Australia.
19. Resolute Resources Limited (RRL) 1995, *Section 18 Application – Marwest Prospect, Marymia*. Perth, Western Australia, 27 April 1995.
20. Rockwater 2019a, *Hydrology and Surface Water Assessment*. April 2019, Western Australia.
21. Rockwater 2019b, *Dewatering Assessment for the Trident and K2 Pits*, May 2019, Western Australia.
22. Rockwater 2019c, *Trident underground Dewatering Assessment*. November 2019, Western Australia.
23. RPM Global 2023a. *Works Approval Supporting Document – Trident underground Mining Dewatering Project* on behalf of Catalyst Metals Ltd (Rev 1), 11 December 2023.
24. RPM Global 2023b. *Works Approval Supporting Document – Trident underground Mining Dewatering Project* on behalf of Catalyst Metals Ltd (Rev 2), 11 December 2023.
25. RUST PPK Pty Ltd, 1995. *Resolute Resources: Marwest Project – Hydrogeological Investigations*. Australia.
26. Sharma, P., Jha, A. B., & Dubey, R. S. 2021, *Arsenic toxicity and tolerance mechanisms in crop plants*, July 2021, Taylor & Francis. <https://www.taylorfrancis.com/chapters/edit/10.1201/9781003093640-46/arsenic-toxicity-tolerance-mechanisms-crop-plants-pallavi-sharma-ambuj-bhushan-jha-rama-shanker-dubey>
27. Waters and Rivers Commission 2000, *Water facts 15 Salinity*, Government of Western Australia, Perth, Western Australia. <https://library.dbca.wa.gov.au/static/Journals/080485/080485-15.pdf>
28. Woodward-Clyde 1997, *Trident Dewatering Investigation*, unpublished report prepared for Resolute Resources Limited, 23 October 1997, Perth, Western Australia.

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

Condition and outstanding matters	Summary of applicant's comment	Department's response
Decision report		
<p>Section 2.2.1 - Confirm whether the above estimates take into consideration dewatering from the Marwest Pit, which is to occur on a campaign basis, or as required.</p>	<p>Yes, the volumes provided from Trident are inclusive of ad-hoc dewatering activities within the base of the Marwest open pit. It is not expected that Marwest will require significant dewatering activities, as the pit lakes SWL has remained fairly static since mining ceased in 1997.</p>	<p>Information added to the Decision Report.</p>
<p>Section 2.2.2 - Confirm whether this diversion channel is proposed to be constructed under this works approval. If so, confirm the measurements provided in Appendix C of the Works Approval Supporting Document (Table 15: Mar East Pits Diversion channels design) are still correct.</p>	<p>Vango Mining is not planning to construct a diversion channel to the southeast of the Mareast open pit. The April 2019 "HYDROLOGY AND SURFACE WATER ASSESSMENT" Rockwater Report recommended this channel as part of mining a cutback within Mareast. Vango Mining is currently not planning to cutback the pit nor do any mining disturbance activities around Mareast. The outer pit perimeter, however, continues to have a well-established abandonment bund encircling the excavation which will aid in controlling any direct surface flows from regional catchments into the pit.</p>	<p>Information about the diversion channel has been removed from the Decision Report.</p>
<p>Section 2.2.3 - Provide additional information on the existing and/or proposed groundwater monitoring network for the operation at both the Marwest and Mareast Pits. Limited information has been provided on this aspect. DWER may impose groundwater and in-pit water quality monitoring as part of regulatory conditions for the operational aspect of the facility under the works approval. Baseline data should be collected prior to discharge to Mareast Pit.</p>	<p>Vango Mining plans to re-instate the existing monitoring holes around the perimeter of Mareast to monitor the response of the groundwater to discharge activities. Attached illustration displays the historical monitoring holes (Figure 1). Should some of these holes be in-operable, Vango Mining would commit to constructing a new network of monitoring holes (and/or conform to recommendations of a hydrogeological assessment).</p> <p>The Marwest pit has historically contained a limited pit lake volume since the completion of mining in 1997 (Figure 2). Vango Mining is committed to ensuring any surface flows are managed and pumped from the pit to control water close to the portal access. As this pit will not receive discharge, and due to the long history of being dry and plans to remain dry, Vango Mining is currently not planning to install or re-commission any monitoring holes around the perimeter of the Marwest open pit.</p>	<p>The department notes that groundwater monitoring bores will be installed/re-instated around the Mareast Pit to monitor the groundwater response to discharge activities.</p> <p>Baseline standing water levels and groundwater quality will be required prior to dewatering discharge activities occurring (Condition 12).</p> <p>Conditions 13 and 14 have been included in the works approval to specify well installation requirements where bores need to be re-installed.</p>

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Condition and outstanding matters	Summary of applicant's comment	Department's response
<p>Section 2.2.4 – Trident Underground - Provide a more recent (&lt;3 years) results of water samples of Trident Underground water.</p>	<p>April 2024 water samples taken from the existing Trident Borefield (1997 Resolute) are in Table 1 below. Vango Mining commenced baseline surveys from March 2024 in recognition of the pending DWER and GWL commitments. The results to date reflect historical groundwater characteristics (sampled since 1995/96).</p> <p>These results are comparable to historical sampling by Rockwater in 2019 provided in Table 2-1 of the works approval application supporting document and in Figure 5 below.</p>	<p>2024 water quality (limited data) has been added to Table 1. Discussion on trident water quality has also been updated.</p>
<p>Section 2.2.4 – Groundwater at Mareast - Provide recent (&lt;3 years old) groundwater quality data at Mareast Pit. Although the Trident Underground and Mareast Pit are within 2 km of each other, the department does not assume the aquifers (i.e. Trident aquifer) they are located in are connected. Recent water quality data is required to infer this</p>	<p>The Mareast pit is currently dry with only small, stagnated water ponds at the base of both pit depths (Figure 3 and Figure 4). Sampling of this water would be biasing a small and evapo-concentrated sample. Nevertheless, refer to Figure 5 for sampling results from July 2023, the water quality is of similar standards and characteristics of Trident. Further to this, water sampling completed in 1996 also confirms similar characteristics (see Figure 6).</p> <p>Field sampling (as part of Vango's commencement of baseline data) was completed on the pit lake in late April 2024 (see Figure 7 and Figure 8) which again confirms similar aquifer/hydrological characteristics.</p> <p>Assessing the historical and current data from Mareast illustrates that Trident, Marwest and Mareast are part of the same hydrologically connected system. All three deposits have the hydrologically granite/ultramafic contact as the dominant structural control.</p>	<p>The department notes that groundwater monitoring bores will be installed/re-instated around the Mareast Pit to monitor the groundwater response to discharge activities.</p> <p>Baseline standing water levels and groundwater quality will be required prior to dewatering discharge activities occurring.</p>
<p>Section 2.2.1 – Hydrogeology at Mareast Pit – Provide a water balance including infiltration estimates at the Mareast Pit.</p>	<p>Trident UG to Mareast Pit Water Balance is included in Appendix A</p>	<p>Water balance included in Figure 3 of the Decision Report.</p>
<p>Section 2.3.2 – Groundwater licence – Provide GWL details</p>	<p>Catalyst holds GWL209789(1) which approves abstraction of up to 300,000kL per year for mine dewatering, mineral exploration, road maintenance and dust suppression purposes and expires on 7th March 2034.</p>	<p>Section updated.</p>
<p>Table 2 – Control the Infiltration – Provide controls for infiltration i.e. groundwater monitoring and other related controls – see Section 2.2.3 for related comments on this aspect</p>	<p>Refer to above response to Section 2.2.3.</p> <p>Vango Mining plans to re-instate the existing monitoring holes around the perimeter of Mareast – to monitor the response of the groundwater to discharge activities. Attached illustration displays the historical monitoring holes (Figure 1). Should some of these holes be in-operable, Vango Mining would commit to constructing a new network of monitoring holes (and/or conform to recommendations of a hydrogeological assessment).</p>	<p>Added reinstatement of groundwater monitoring to Table 2: Proposed applicant controls.</p>
<p>Table 3 – Groundwater Mareast Pit – Provide standing water level and water quality of the groundwater at Mareast Pit.</p>	<p>The Mareast pit contains small, stagnated water ponds at the base of both pit depths (Figure 3 and Figure 4).</p> <p>The pit crest is at 612.5mAHD whilst the eastern deepest section was mined to</p>	<p>The department notes that groundwater monitoring bores will be installed/re-instated around the Mareast Pit to monitor the</p>

Condition and outstanding matters	Summary of applicant's comment	Department's response
	<p>577.5mAHD and the western section down to 575mAHD. Overall the pit is 35-37m vertically deep and with a SWL of 577-572mAHD.</p> <p>Water quality data for Mareast is presented in Figure 5 (2023) and Figure 6 (1996).</p>	<p>groundwater response to discharge activities.</p> <p>Baseline standing water levels and groundwater quality will be required prior to dewatering discharge activities occurring (Condition 12).</p> <p>Conditions 13 and 14 have been included in the works approval to specify well installation requirements where bores need to be re-installed.</p>
<p>Table 5 – Marputu – Provide confirmation that adequate consultation with the Marputu Aboriginal Corporation RNTBC has occurred prior to the issuing of this works approval</p>	<p>On 15 November 2023, the Annual NT Meeting with Vango (subsidiary of Catalyst Metals - CYL) was cancelled by the Marputu.</p> <p>CYL sent email correspondence on 20 December 2023 regarding the request for a meeting in early 2024 which specifically mentioned the Trident Development Project.</p> <p>A follow up email was also sent on 24 January 2024 to which the Marputu replied to on 12 February 2024 with notice of receipt.</p> <p>On 27 February 2024, Marputu replied with an invitation for CYL to attend a meeting in Newman on 22 March 2024. Two CYL representatives attended the meeting where they ran through the current development plan for Trident – including surface requirements, dewatering activities, and life-of-mine plans.</p> <p>Continued engagement and consultation are planned with the Marputu.</p>	<p>Refer to Table 5 of the Decision Report for a summary of consultation processes related to the application assessment.</p>
<p>Works Approval</p>		
<p>Table 1 – Item 1 - In Pit sumps - Provide information including proposed configuration/dimensions.</p> <p>As per Schedule 1 Figure 2.</p>	<p>Marwest pit will be dewatered on a campaign/as required basis to ensure water levels are managed within this void, and therefore avoiding any safety or flooding concerns regarding access to the Trident portal.</p> <p>It is expected that a standing water level of 2.5-5 vertical metres will be maintained as a standard in the lower level of the pit to minimise mechanical risks associated with pumping slurry water. In cases where water levels surpass this range, the permanent pump infrastructure at the lake edge will be activated. The pump infrastructure will be permanently located along a section of the existing pit ramp where safe access is feasible and where suction lines/submersible pumps have sufficient water depth without 'bottoming</p>	<p>In-Pit sump removed from Table 1. Pit-lake dewatering infrastructure requirements included in Table 1.</p> <p>Consequently, dewatering of the Pit-lake has been redescribed in section 2.2.1 of the Decision Report.</p>

Condition and outstanding matters	Summary of applicant's comment	Department's response
	<p>out'.</p> <p>As a result, dewatering will be completed by pit lake methods rather than a conventional in pit sump.</p>	
<p>Table 1 – Item 5 Turkeys nest- Provide construction details i.e. capacity, dimensions, etc.</p>	<p>A Turkey's Nest has been proposed and approved, under the Small Mining Operations license, to contain the small and manageable dewatering rates for initial decline mining.</p> <p>This Works Approval and subsequent approval of the full Mining Proposal (submitted on 13 September 2023) will enable groundwater to be directly pumped into the Mareast void (for storage and settling of solids). When operating under this long-term dewatering system, the Turkey's Nest will have an automated diversion T-piece on the main manifold to Mareast, enabling ad-hoc filling of the dam for water cart and site dust suppression requirements.</p> <p>The Turkey's Nest will be lined, 50mx50m wide and 1.5m vertical in height (approximately 3,000 m3 at 300 mm freeboard). As mentioned above, if the Mining Proposal and Works Approvals are approved, then Vango Mining would look to only utilise the Turkey's Nest capacity for water cart requirements. Under this scenario, Catalyst may instead use contained poly tanks (2x50kL) as a substitute to the originally proposed Turkey's Nest.</p>	<p>Provisions for the Turkey's Nest have been updated in Condition 1, Table 1.</p> <p>Option to install contained poly tanks (2x50kL) as a substitute (or in addition) to the proposed Turkey's Nest included in Table 1.</p>
<p>Table 1 – Item 6 - Provide information on ambient groundwater monitoring in the vicinity of Mareast Pit, including SWL and quality, with baseline monitoring results to be obtained prior to discharge to Mareast Pit.</p> <p>Groundwater monitoring bores TBA</p>	<p>Vango Mining plans to re-instate the existing monitoring holes around the perimeter of Mareast to monitor the response of the groundwater to discharge activities. Attached illustration displays the historical monitoring holes (Figure 1). Should some of these holes be in-operable and there is not at least one monitoring bore on either side of Mareast pit, Vango Mining would commit to constructing a new network of monitoring holes within 6 months of discharge commencing (and/or conform to recommendations of a hydrogeological assessment).</p> <p>The Mareast pit contains small, stagnated water ponds at the base of both pit depths (Figure 3 and Figure 4).</p> <p>The pit crest is at 612.5mAHD whilst the eastern deepest section was mined to 577.5mAHD and the western section down to 575mAHD. Overall, the pit is 35-37m vertically deep and with a SWL of 577-572mAHD.</p> <p>Water quality data for Mareast is presented in Figure 5 (2013) and Figure 6 (1996).</p>	<p>Limited information was provided in the application on the proposed groundwater monitoring program.</p> <p>The department notes that groundwater monitoring bores will be installed/re-instated around the Mareast Pit to monitor the groundwater response to discharge activities.</p> <p>Baseline standing water levels and groundwater quality will be required prior to dewatering discharge activities occurring (Condition 12).</p>
<p>Table 6 - Provide information on the ambient groundwater monitoring bores, including baseline monitoring to be obtained prior to discharge occurring to Mareast Pit</p>	<p>Vango Mining plans to re-instate the existing monitoring holes around the perimeter of Mareast to monitor the response of the groundwater to discharge activities. Attached illustration displays the historical monitoring holes (Figure 1). Should some of these holes be in-operable, Vango Mining would commit to constructing a new network of monitoring holes (and/or conform to recommendations of a hydrological assessment).</p> <p>Vango Mining would commence monitoring of these bores (as per Table 6</p>	<p>Conditions 13 and 14 have been included in the works approval to specify well installation requirements where bores need to be re-installed.</p> <p>Should alternative locations be</p>

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	<p>recommendations) prior to any discharge into the Mareast pit. Monitoring would occur in the quarter prior to any discharge, with the frequency and type of monitoring in accordance with the operating conditions set out in Tab 6 of the Response to Works Approval Queries.</p>	<p>proposed for monitoring bores the applicant should seek to formally amend the works approval so that the department can assess the adequacy of locations and modify works approval conditions accordingly.</p>
<p>Table 7 – “monthly period” - provide preferred days</p>	<p>Commencing from “the tenth (10)” of a month.</p>	<p>The department has elected to remove this definition and has instead included general requirements for monitoring periods in conditions of the works approval (refer to Condition 9). This provides a more flexible approach to monitoring frequencies.</p>